

ELIMINATE STATIC ELECTRICITY

MAVILLUM LO 50W 7000 FAS Approved

MAVILLUM CARPET TILES
Duke St. Bedford, 214155

NEWS IN BRIEF

CAFS offered in US

FOLLOWING the US launch of the ME20 low-end mainframe and the Distributed Array Processor, DAP, ICL has now added CAFS. Its hardware database system to its US product line. A CAFS subsystem will have a starting price of about \$500,000 in the US and is offered there with 2950, 2956 and 2960 microfilm running under DME.

A VME/B version of the host software is under development but is not ready yet, and CAFS is currently available only with the old EDS 80 disc drives.

WP launch

A. B. DICK is to introduce a new word processor late this year. Called the Minigra 3, it will have a half-page screen and will be clusterable up to 255 stations.

Into the regions

REGIONAL offices are being set up by the National Research Development Corp to help expand its activities in financing new technology projects. Managers have been appointed for Scotland, based in Glasgow, and the Midlands, based in Birmingham.

BUPA \$1m order

A £1 MILLION order for an IBM 4341 with peripherals and communications hardware has been placed by BUPA. The two Mbyte processor will support an SNA network serving 130 IBM 3270 VDUs at the association's 12 branches.

Mystery over BCS membership figures

MYSTERY surrounds the membership figures of the British Computer Society which are due for inclusion in its annual report, currently being prepared for the society's annual meeting at Birmingham in October. The report says membership has risen to 22,000. On the basis of fees, income for 1978/79 in theory should have been about £380,000, but it was reported at £284,176. Membership for 1979/80 is understood to be about 23,950.

There is some doubt whether the society is lapsing non-payers and even allowing them to go over a year before they are lapsed in an effort to keep up membership figures.

At present BCS head office staff report non-payers to the general treasurer who then circulates details to the branches so

that officers can chase them up. Ultimately, the BCS council has the power to lapse non-payers.

In the formal notification of the society's annual meeting — which is to be held at Birmingham Council House on Thursday, October 9 at 2.30 pm — no members who are more than four months in arrears will be allowed to vote.

According to a confidential document sent to Computer Weekly, the society intends to ask for the fees to be put up, ranging from £25 to £32 for a fellow, and £19 to £24 for a member.

The document suggests that between 2 and 3% of fellows will be lost, 5% (about 500) of ordinary members, but compensated by 100 new members and transfers, and the new

student intake of 1,000 will outnumber those resigning or moving to other grades by about 350. There will be a 1,750 loss against 2,250 new members.

The document says that a £2 cut in the proposed increase at all grades would cost the society about £35,000. However, the document suggests this means the membership is more in the order of 17,500.

A society spokesman was emphatic that the membership was over 23,000 and the amount of membership fees received had exceeded the budget. He added that if the rises were not approved there would have to be cuts at all levels, especially in specialist groups and publications.

The draft annual report is to be considered at the society's council meeting on July 23.

Fortdesign

manufacturers of High Quality
COMPUTER FORMS
Rush Deliveries Are Our Specialty
NATIONAL WORKS
HALL STREET, DUDLEY
WEST MIDLANDS
DUDLEY (0384) 213661

Shell tests Scrapbook as mail system

SCRAPBOOK, the information retrieval and database handling system originally developed at the National Physical Laboratory, is being used experimentally at Shell UK as an electronic mail system for managers. Special terminals and printers have been installed at Shell UK's London headquarters.

Scrapbook (CW, March 1977) is now handled by system house Triad, which has converted it to run on Digital Equipment PDP-11s. An IBM can support about four simultaneous users, while an ILLINOIS handia 30 to 35. Previous terminals have been in use at the National Water Council and the EEC in Luxembourg.

Shell will not say how many terminals are involved in its trials, which are nearing completion, or who exactly the system is intended to benefit, but it is understood that managers are using the terminals themselves.

IBM back-up

A BACK-UP service offered by BOC Datacube can take the work from IBM systems under any of the OS operating systems, including MVS, and 24 hours. Datacube will provide a back-up service with a special software interface designed to ensure that the subject's applications remain compatible with the back-up system.

Data Preparation

We have the capacity to punch your peak loads. The set-ups or regular work on 80 column cards. Croydon: Rada Waugh. Telephone: 01-688 6047

Peter Metrick Associates Ltd
International Computer Services
Croydon House
57-59 Ladbroke Road
Croydon CR0 1TB

Briefing IBM's future systems

IMMINENT IBM product announcements include the long overdue replacement for the 3705 SNA/NCP front end processor, a high speed tape streamer for archiving from the new 3375 and 3380 discs, and a double density version of the 3850 mass storage system, with integral 3880 controller and disc unit. In early 1982, a two gigabyte disc drive code-named McKinley will follow, and a file processor with some elements of the DL/I database system built in.

These were among the predictions made at last week's Online Future Systems Forum. Reports, page 11.

Home for Babbage

A PERMANENT home has been found for the Charles Babbage Institute for the History of Information Processing at Minnesota University. Robert Stuever, lecturer in the history of science at the university, will serve as acting director until a permanent head is found for the institute, which was founded in 1977 by Ervin Tormaah, founder of Dataproducts.

More power

CMC has announced a new processor for its Reality business system providing 30% more power at 20% less cost. Memory and disc capacity can now be expanded up to 512K-bytes and 800 megabyte, respectively. CMC now faces direct competition from the two UK distributors set up by Ultimate Corp, the arch-rival of CMC's US parent, Microdata. See page 5.

COMPUTER WEEKLY

Number 715 Thursday, July 17, 1980 Price 20p

Racal leads in PoS funds transfer

POINT of sale terminals for electronic funds transfer are first on the list of Racal-Transcom which was formed to develop, manufacture and market electronic funds transfer systems at Salisbury, Wiltshire.

At present it comes under the umbrella of Racal-Datacom, which is outside the data com-

munication group and is primarily involved in secure data communication.

Racal-Datacom's experience in encryption, a key requirement for EFTS, led it to respond to requests from clearing banks for concepts and pilot products meeting their requirements of security.

As a result an EFTS terminal activated by a magnetic stripe card and including an attached keypad to enable the customer to key in their secret personal number has been demonstrated. The terminal also includes a dual roll printer which produces a receipt for the customer and a transaction record for the store.

EEC calls for big micro boost

IF Europe's microelectronics industry is to overcome the lead held by the US and Japan by 1985, the development of the complex production equipment needed must be supported. This is a major plank in a strategy being planned by the EEC Commission.

The Commission is to present its support plan for microelectronics shortly and it diverges sharply from the national plans in various countries, notably France and West Germany, which emphasise the mastery of current technology frequently in collaboration with US companies.

The Commission's view is that Europe will never leap the technology gap unless the key process plant is available from local manufacturers. US process equipment manufacturers naturally favour US companies with the first models of their most advanced equipment, frequently in prototype form.

US microelectronic companies thus get nine months' or a year's vital experience with the next generation of plant before it is even offered to the European manufacturers.

The aim of the programme is for Europe to be able to produce

original sub-micro microelectronic circuits by 1985.

A comparable US programme is being funded at \$200 million, and this is the sort of money that the Commission will be seeking for its four-year programme.

The Commission is hoping for a decision to go ahead with the programme from the Council of Ministers by the end of the year, but the precedents are not good. The four-year computer support plan took about three years to be accepted and the proposed budget was slashed to about a quarter of that originally sought, 25 million units of account (£15.18 million).

The microelectronic programme will also emphasise computer-aided design and testing equipment for microelectronic circuitry.

One hurdle to overcome is that the West Germans want the programme confined to national funding for national industries whereas other member states want an EEC-wide programme using funds that do not exist.

Falling orders blamed for NCR jobs axe

FALLING orders have forced NCR to axe 40 jobs in its commercial and industrial marketing division, including those of 17 graduates recruited last autumn. Other jobs affected are those of systems and support staff.

The company is endeavouring to find jobs in other divisions for the 40 staff and, according to a spokesman, two-thirds of the graduates have been redeployed. Alternative posts are more plentiful in the London area than in the North of England and Scotland. The spokesman dismissed as a "rubbish" report that the number of redundancies was much larger.

A European spokesman said the company had no plans to lay off staff.



First product from Racal's latest subsidiary, Racal-Transcom, is a PoS terminal that can be used for electronic funds transfer. The customer (pictured left) is using a small hand held device to key in her personal code which must match the number recorded on her bank's card.

Buyer found

MICRO systems house Abacus Computers has been bought by an unnamed large UK peripherals distributor and a new company is to be formed which will be a subsidiary. Derek Rowa, who remains as managing director of Abacus, said final details would be agreed next week.

He said that the company, where the receiver was called in by its bank (CW June 28) had been taken over as a going concern, and would carry on operating as before.

US national education plan

WHILE the UK government still dithers over its plan to spend £9 million on micro education in schools, a US congressman is campaigning for a similar programme which would cost \$4 million over the next year. Representative Thomas Downey (Democrat, New York) has introduced a bill to establish national centres for promoting the use of

cheap micros in primary and secondary classrooms. The centres would be set up by private organisations, under federal grants and would aim to develop curriculum materials and show schools how computer education can be organised by setting up pilot projects. Downey is concerned that many children, particularly from inner cities,

might go all the way through school without ever seeing a computer. Despite interest in both houses of Congress there is little chance that Downey's bill will be passed this year, owing to pressure of other legislative business. Educational funding in the US is even more decentralised than here.

Big drop in NCC's operating surplus

INCOME from the sale of products and services by the National Computing Centre rose 30% to £2.8 million last year, while the centre's government work under contract for the Computers, Systems and Electronics Requirements Board fell to 26% of total income, compared with 30% last year (CW July 13). The actual figure for the latter activity was £1.14 million, an increase of about 12% over 1978/79.

The centre's operating surplus, which ended March 31, 1980, was £88,000, down from £280,000 the previous year. The NCC does not declare a dividend.

With turnover derived from members' subscriptions, government contracts and sales

of products and services, its aim is to keep income and expenditure broadly in balance, since a big surplus at the end of the year leaves the NCC liable for corporation tax. Income during the year rose 28.4% to £4.4 million. Overall, it is charged with providing a framework of knowledge, standards and understanding of effective computing practice, with representing the interests of its members, and selling computer products.

There are now 1,648 member establishments, and membership grew by 353 during the year. The NCC has been co-operating closely with the Department of Industry in the Microprocessor Application Project.

Public access to information

THE Access to Information Bill, which is to be introduced by the Home Secretary, will give the public a right of access to information held by government departments and public bodies. It will also give the public a right of access to information held by private bodies, such as financial institutions, insurance companies, and utility companies. The bill will also give the public a right of access to information held by the police and the security services. The bill will also give the public a right of access to information held by the armed forces. The bill will also give the public a right of access to information held by the civil service. The bill will also give the public a right of access to information held by the judiciary. The bill will also give the public a right of access to information held by the media. The bill will also give the public a right of access to information held by the arts and sciences. The bill will also give the public a right of access to information held by the environment. The bill will also give the public a right of access to information held by the health and social services. The bill will also give the public a right of access to information held by the transport and infrastructure. The bill will also give the public a right of access to information held by the energy and utilities. The bill will also give the public a right of access to information held by the telecommunications. The bill will also give the public a right of access to information held by the space and aviation. The bill will also give the public a right of access to information held by the defence and security. The bill will also give the public a right of access to information held by the foreign and international relations. The bill will also give the public a right of access to information held by the home and domestic affairs. The bill will also give the public a right of access to information held by the justice and law. The bill will also give the public a right of access to information held by the education and research. The bill will also give the public a right of access to information held by the culture and heritage. The bill will also give the public a right of access to information held by the environment and nature. The bill will also give the public a right of access to information held by the science and technology. The bill will also give the public a right of access to information held by the industry and commerce. The bill will also give the public a right of access to information held by the agriculture and fisheries. The bill will also give the public a right of access to information held by the transport and infrastructure. The bill will also give the public a right of access to information held by the energy and utilities. The bill will also give the public a right of access to information held by the telecommunications. The bill will also give the public a right of access to information held by the space and aviation. The bill will also give the public a right of access to information held by the defence and security. The bill will also give the public a right of access to information held by the foreign and international relations. The bill will also give the public a right of access to information held by the home and domestic affairs. The bill will also give the public a right of access to information held by the justice and law. The bill will also give the public a right of access to information held by the education and research. The bill will also give the public a right of access to information held by the culture and heritage. The bill will also give the public a right of access to information held by the environment and nature. The bill will also give the public a right of access to information held by the science and technology. The bill will also give the public a right of access to information held by the industry and commerce. The bill will also give the public a right of access to information held by the agriculture and fisheries. The bill will also give the public a right of access to information held by the transport and infrastructure. The bill will also give the public a right of access to information held by the energy and utilities. The bill will also give the public a right of access to information held by the telecommunications. The bill will also give the public a right of access to information held by the space and aviation. The bill will also give the public a right of access to information held by the defence and security. The bill will also give the public a right of access to information held by the foreign and international relations. The bill will also give the public a right of access to information held by the home and domestic affairs. The bill will also give the public a right of access to information held by the justice and law. The bill will also give the public a right of access to information held by the education and research. The bill will also give the public a right of access to information held by the culture and heritage. The bill will also give the public a right of access to information held by the environment and nature. The bill will also give the public a right of access to information held by the science and technology. The bill will also give the public a right of access to information held by the industry and commerce. The bill will also give the public a right of access to information held by the agriculture and fisheries. The bill will also give the public a right of access to information held by the transport and infrastructure. The bill will also give the public a right of access to information held by the energy and utilities. The bill will also give the public a right of access to information held by the telecommunications. The bill will also give the public a right of access to information held by the space and aviation. The bill will also give the public a right of access to information held by the defence and security. The bill will also give the public a right of access to information held by the foreign and international relations. The bill will also give the public a right of access to information held by the home and domestic affairs. The bill will also give the public a right of access to information held by the justice and law. The bill will also give the public a right of access to information held by the education and research. The bill will also give the public a right of access to information held by the culture and heritage. The bill will also give the public a right of access to information held by the environment and nature. The bill will also give the public a right of access to information held by the science and technology. The bill will also give the public a right of access to information held by the industry and commerce. The bill will also give the public a right of access to information held by the agriculture and fisheries. The bill will also give the public a right of access to information held by the transport and infrastructure. The bill will also give the public a right of access to information held by the energy and utilities. The bill will also give the public a right of access to information held by the telecommunications. The bill will also give the public a right of access to information held by the space and aviation. The bill will also give the public a right of access to information held by the defence and security. The bill will also give the public a right of access to information held by the foreign and international relations. The bill will also give the public a right of access to information held by the home and domestic affairs. The bill will also give the public a right of access to information held by the justice and law. The bill will also give the public a right of access to information held by the education and research. The bill will also give the public a right of access to information held by the culture and heritage. The bill will also give the public a right of access to information held by the environment and nature. The bill will also give the public a right of access to information held by the science and technology. The bill will also give the public a right of access to information held by the industry and commerce. The bill will also give the public a right of access to information held by the agriculture and fisheries. The bill will also give the public a right of access to information held by the transport and infrastructure. The bill will also give the public a right of access to information held by the energy and utilities. The bill will also give the public a right of access to information held by the telecommunications. The bill will also give the public a right of access to information held by the space and aviation. The bill will also give the public a right of access to information held by the defence and security. The bill will also give the public a right of access to information held by the foreign and international relations. The bill will also give the public a right of access to information held by the home and domestic affairs. The bill will also give the public a right of access to information held by the justice and law. The bill will also give the public a right of access to information held by the education and research. The bill will also give the public a right of access to information held by the culture and heritage. The bill will also give the public a right of access to information held by the environment and nature. The bill will also give the public a right of access to information held by the science and technology. The bill will also give the public a right of access to information held by the industry and commerce. The bill will also give the public a right of access to information held by the agriculture and fisheries. The bill will also give the public a right of access to information held by the transport and infrastructure. The bill will also give the public a right of access to information held by the energy and utilities. The bill will also give the public a right of access to information held by the telecommunications. The bill will also give the public a right of access to information held by the space and aviation. The bill will also give the public a right of access to information held by the defence and security. The bill will also give the public a right of access to information held by the foreign and international relations. The bill will also give the public a right of access to information held by the home and domestic affairs. The bill will also give the public a right of access to information held by the justice and law. The bill will also give the public a right of access to information held by the education and research. The bill will also give the public a right of access to information held by the culture and heritage. The bill will also give the public a right of access to information held by the environment and nature. The bill will also give the public a right of access to information held by the science and technology. The bill will also give the public a right of access to information held by the industry and commerce. The bill will also give the public a right of access to information held by the agriculture and fisheries. The bill will also give the public a right of access to information held by the transport and infrastructure. The bill will also give the public a right of access to information held by the energy and utilities. The bill will also give the public a right of access to information held by the telecommunications. The bill will also give the public a right of access to information held by the space and aviation. The bill will also give the public a right of access to information held by the defence and security. The bill will also give the public a right of access to information held by the foreign and international relations. The bill will also give the public a right of access to information held by the home and domestic affairs. The bill will also give the public a right of access to information held by the justice and law. The bill will also give the public a right of access to information held by the education and research. The bill will also give the public a right of access to information held by the culture and heritage. The bill will also give the public a right of access to information held by the environment and nature. The bill will also give the public a right of access to information held by the science and technology. The bill will also give the public a right of access to information held by the industry and commerce. The bill will also give the public a right of access to information held by the agriculture and fisheries. The bill will also give the public a right of access to information held by the transport and infrastructure. The bill will also give the public a right of access to information held by the energy and utilities. The bill will also give the public a right of access to information held by the telecommunications. The bill will also give the public a right of access to information held by the space and aviation. The bill will also give the public a right of access to information held by the defence and security. The bill will also give the public a right of access to information held by the foreign and international relations. The bill will also give the public a right of access to information held by the home and domestic affairs. The bill will also give the public a right of access to information held by the justice and law. The bill will also give the public a right of access to information held by the education and research. The bill will also give the public a right of access to information held by the culture and heritage. The bill will also give the public a right of access to information held by the environment and nature. The bill will also give the public a right of access to information held by the science and technology. The bill will also give the public a right of access to information held by the industry and commerce. The bill will also give the public a right of access to information held by the agriculture and fisheries. The bill will also give the public a right of access to information held by the transport and infrastructure. The bill will also give the public a right of access to information held by the energy and utilities. The bill will also give the public a right of access to information held by the telecommunications. The bill will also give the public a right of access to information held by the space and aviation. The bill will also give the public a right of access to information held by the defence and security. The bill will also give the public a right of access to information held by the foreign and international relations. The bill will also give the public a right of access to information held by the home and domestic affairs. The bill will also give the public a right of access to information held by the justice and law. The bill will also give the public a right of access to information held by the education and research. The bill will also give the public a right of access to information held by the culture and heritage. The bill will also give the public a right of access to information held by the environment and nature. The bill will also give the public a right of access to information held by the science and technology. The bill will also give the public a right of access to information held by the industry and commerce. The bill will also give the public a right of access to information held by the agriculture and fisheries. The bill will also give the public a right of access to information held by the transport and infrastructure. The bill will also give the public a right of access to information held by the energy and utilities. The bill will also give the public a right of access to information held by the telecommunications. The bill will also give the public a right of access to information held by the space and aviation. The bill will also give the public a right of access to information held by the defence and security. The bill will also give the public a right of access to information held by the foreign and international relations. The bill will also give the public a right of access to information held by the home and domestic affairs. The bill will also give the public a right of access to information held by the justice and law. The bill will also give the public a right of access to information held by the education and research. The bill will also give the public a right of access to information held by the culture and heritage. The bill will also give the public a right of access to information held by the environment and nature. The bill will also give the public a right of access to information held by the science and technology. The bill will also give the public a right of access to information held by the industry and commerce. The bill will also give the public a right of access to information held by the agriculture and fisheries. The bill will also give the public a right of access to information held by the transport and infrastructure. The bill will also give the public a right of access to information held by the energy and utilities. The bill will also give the public a right of access to information held by the telecommunications. The bill will also give the public a right of access to information held by the space and aviation. The bill will also give the public a right of access to information held by the defence and security. The bill will also give the public a right of access to information held by the foreign and international relations. The bill will also give the public a right of access to information held by the home and domestic affairs. The bill will also give the public a right of access to information held by the justice and law. The bill will also give the public a right of access to information held by the education and research. The bill will also give the public a right of access to information held by the culture and heritage. The bill will also give the public a right of access to information held by the environment and nature. The bill will also give the public a right of access to information held by the science and technology. The bill will also give the public a right of access to information held by the industry and commerce. The bill will also give the public a right of access to information held by the agriculture and fisheries. The bill will also give the public a right of access to information held by the transport and infrastructure. The bill will also give the public a right of access to information held by the energy and utilities. The bill will also give the public a right of access to information held by the telecommunications. The bill will also give the public a right of access to information held by the space and aviation. The bill will also give the public a right of access to information held by the defence and security. The bill will also give the public a right of access to information held by the foreign and international relations. The bill will also give the public a right of access to information held by the home and domestic affairs. The bill will also give the public a right of access to information held by the justice and law. The bill will also give the public a right of access to information held by the education and research. The bill will also give the public a right of access to information held by the culture and heritage. The bill will also give the public a right of access to information held by the environment and nature. The bill will also give the public a right of access to information held by the science and technology. The bill will also give the public a right of access to information held by the industry and commerce. The bill will also give the public a right of access to information held by the agriculture and fisheries. The bill will also give the public a right of access to information held by the transport and infrastructure. The bill will also give the public a right of access to information held by the energy and utilities. The bill will also give the public a right of access to information held by the telecommunications. The bill will also give the public a right of access to information held by the space and aviation. The bill will also give the public a right of access to information held by the defence and security. The bill will also give the public a right of access to information held by the foreign and international relations. The bill will also give the public a right of access to information held by the home and domestic affairs. The bill will also give the public a right of access to information held by the justice and law. The bill will also give the public a right of access to information held by the education and research. The bill will also give the public a right of access to information held by the culture and heritage. The bill will also give the public a right of access to information held by the environment and nature. The bill will also give the public a right of access to information held by the science and technology. The bill will also give the public a right of access to information held by the industry and commerce. The bill will also give the public a right of access to information held by the agriculture and fisheries. The bill will also give the public a right of access to information held by the transport and infrastructure. The bill will also give the public a right of access to information held by the energy and utilities. The bill will also give the public a right of access to information held by the telecommunications. The bill will also give the public a right of access to information held by the space and aviation. The bill will also give the public a right of access to information held by the defence and security. The bill will also give the public a right of access to information held by the foreign and international relations. The bill will also give the public a right of access to information held by the home and domestic affairs. The bill will also give the public a right of access to information held by the justice and law. The bill will also give the public a right of access to information held by the education and research. The bill will also give the public a right of access to information held by the culture and heritage. The bill will also give the public a right of access to information held by the environment and nature. The bill will also give the public a right of access to information held by the science and technology. The bill will also give the public a right of access to information held by the industry and commerce. The bill will also give the public a right of access to information held by the agriculture and fisheries. The bill will also give the public a right of access to information held by the transport and infrastructure. The bill will also give the public a right of access to information held by the energy and utilities. The bill will also give the public a right of access to information held by the telecommunications. The bill will also give the public a right of access to information held by the space and aviation. The bill will also give the public a right of access to information held by the defence and security. The bill will also give the public a right of access to information held by the foreign and international relations. The bill will also give the public a right of access to information held by the home and domestic affairs. The bill will also give the public a right of access to information held by the justice and law. The bill will also give the public a right of access to information held by the education and research. The bill will also give the public a right of access to information held by the culture and heritage. The bill will also give the public a right of access to information held by the environment and nature. The bill will also give the public a right of access to information held by the science and technology. The bill will also give the public a right of access to information held by the industry and commerce. The bill will also give the public a right of access to information held by the agriculture and fisheries. The bill will also give the public a right of access to information held by the transport and infrastructure. The bill will also give the public a right of access to information held by the energy and utilities. The bill will also give the public a right of access to information held by the telecommunications. The bill will also give the public a right of access to information held by the space and aviation. The bill will also give the public a right of access to information held by the defence and security. The bill will also give the public a right of access to information held by the foreign and international relations. The bill will also give the public a right of access to information held by the home and domestic affairs. The bill will also give the public a right of access to information held by the justice and law. The bill will also give the public a right of access to information held by the education and research. The bill will also give the public a right of access to information held by the culture and heritage. The bill will also give the public a right of access to information held by the environment and nature. The bill will also give the public a right of access to information held by the science and technology. The bill will also give the public a right of access to information held by the industry and commerce. The bill will also give the public a right of access to information held by the agriculture and fisheries. The bill will also give the public a right of access to information held by the transport and infrastructure. The bill will also give the public a right of access to information held by the energy and utilities. The bill will also give the public a right of access to information held by the telecommunications. The bill will also give the public a right of access to information held by the space and aviation. The bill will also give the public a right of access to information held by the defence and security. The bill will also give the public a right of access to information held by the foreign and international relations. The bill will also give the public a right of access to information held by the home and domestic affairs. The bill will also give the public a right of access to information held by the justice and law. The bill will also give the public a right of access to information held by the education and research. The bill will also give the public a right of access to information held by the culture and heritage. The bill will also give the public a right of access to information held by the environment and nature. The bill will also give the public a right of access to information held by the science and technology. The bill will also give the public a right of access to information held by the industry and commerce. The bill will also give the public a right of access to information held by the agriculture and fisheries. The bill will also give the public a right of access to information held by the transport and infrastructure. The bill will also give the public a right of access to information held by the energy and utilities. The bill will also give the public a right of access to information held by the telecommunications. The bill will also give the public a right of access to information held by the space and aviation. The bill will also give the public a right of access to information held by the defence and security. The bill will also give the public a right of access to information held by the foreign and international relations. The bill will also give the public a right of access to information held by the home and domestic affairs. The bill will also give the public a right of access to information held by the justice and law. The bill will also give the public a right of access to information held by the education and research. The bill will also give the public a right of access to information held by the culture and heritage. The bill will also give the public a right of access to information held by the environment and nature. The bill will also give the public a right of access to information held by the science and technology. The bill will also give the public a right of access to information held by the industry and commerce. The bill will also give the public a right of access to information held by the agriculture and fisheries. The bill will also give the public a right of access to information held by the transport and infrastructure. The bill will also give the public a right of access to information held by the energy and utilities. The bill will also give the public a right of access to information held by the telecommunications. The bill will also give the public a right of access to information held by the space and aviation. The bill will also give the public a right of access to information held by the defence and security. The bill will also give the public a right of access to information held by the foreign and international relations. The bill will also give the public a right of access to information held by the home and domestic affairs. The bill will also give the public a right of access to information held by the justice and law. The bill will also give the public a right of access to information held by the education and research. The bill will also give the public a right of access to information held by the culture and heritage. The bill will also give the public a right of access to information held by the environment and nature. The bill will also give the public a right of access to information held by the science and technology. The bill will also give the public a right of access to information held by the industry and commerce. The bill will also give the public a right of access to information held by the agriculture and fisheries. The bill will also give the public a right of access to information held by the transport and infrastructure. The bill will also give the public a right of access to information held by the energy and utilities. The bill will also give the public a right of access to information held by the telecommunications. The bill will also give the public a right of access to information held by the space and aviation. The bill will also give the public a right of access to information held by the defence and security. The bill will also give the public a right of access to information held by the foreign and international relations. The bill will also give the public a right of access to information held by the home and domestic affairs. The bill will also give the public a right of access to information held by the justice and law. The bill will also give the public a right of access to information held by the education and research. The bill will also give the public a right of access to information held by the culture and heritage. The bill will also give the public a right of access to information held by the environment and nature. The bill will also give the public a right of access to information held by the science and technology. The bill will also give the public a right of access to information held by the industry and commerce. The bill will also give the public a right of access to information held by the agriculture and fisheries. The bill will also give the public a right of access to information held by the transport and infrastructure. The bill will also give the public a right of access to information held by the energy and utilities. The bill will also give the public a right of access to information held by the telecommunications. The bill will also give the public a right of access to information held by the space and aviation. The bill will also give the public a right of access to information held by the defence and security. The bill will also give the public a right of access to information held by the foreign and international relations. The bill will also give the public a right of access to information held by the home and domestic affairs. The bill will also give the public a right of access to information held by the justice and law. The bill will also give the public a right of access to information held by the education and research. The bill will also give the public a right of access to information held by the culture and heritage. The bill will also give the public a right of access to information held by the environment and nature. The bill will also give the public a right of access to information held by the science and technology. The bill will also give the public a right of access to information held by the industry and commerce. The bill will also give the public a right of access to information held by the agriculture and fisheries. The bill will also give the public a right of access to information held by the transport and infrastructure. The bill will also give the public a right of access to information held by the energy and utilities. The bill will also give the public a right of access to information held by the telecommunications. The bill will also give the public a right of access to information held by the space and aviation. The bill will also give the public a right of access to information held by the defence and security. The bill will also give the public a right of access to information held by the foreign and international relations. The bill will also give the public a right of access to information held by the home and domestic affairs. The bill will also give the public a right of access to information held by the justice and law. The bill will also give the public a right of access to information held by the education and research. The bill will also give the public a right of access to information held by the culture and heritage. The bill will also give the public a right of access to information held by the environment and nature. The bill will also give the public a right of access to information held by the science and technology. The bill will also give the public a right of access to information held by

Downtime

by Chad

The answer's always the same

I NEVER cease to be amazed by the ingenuity of toy-makers. Why can't we harness it to solve all our industrial problems? Ah, but then the toy-makers nowadays are all in Japan and Hong Kong, and it's not their industrial problems we want solved.

What prompts my awe now is a toy watch I saw in a shop the other day. Remember the toy watches of your youth? You would twiddle the knob and the hands would turn round (together). Now how do you suppose you would make a working toy digital watch?

Impossible? Not at all. There it was, "New battery-powered digital watch — lights up like the real thing." And indeed it did. I pressed the button and it read "11.27."

It was in fact 2:34 at the time, so my razor-sharp mind realised there was a catch. The figures are moulded into a plastic template so it is permanently 11.27.

"Stands the toy watch at half past eleven and is there lumpy still for lunch?" It could give our offspring some curious ideas about time.

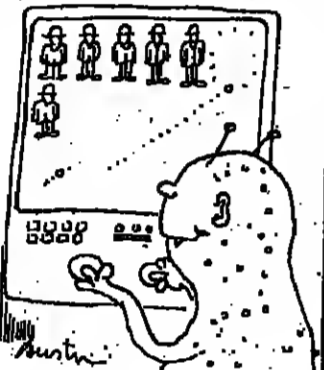
The next step is obviously a toy computer. It would have a printer, with a printed stationary in a roll inside, and for whatever problem you typed the keys, you would get a

piece of paper with the same answer.

But what would this answer be? It shouldn't be too difficult to think of one, considering how many experts these days have a needle-stuck-in-groove mechanism for giving advice.

Every week there is a radio programme for people to phone in about the problems they are having with their children, and to every question the answer is "Don't worry, they'll get over it." Harley Street is populated by psychiatrists who listen more or less intently for 50 minutes and then say, "Come to terms with it."

With all this skill in prefabricated answers, we ought to incorporate them in real computers as well as toy ones.



Chipping away

LAST week's biggest yawn was the news that the Labour Party thinks there should be more State intervention to protect us from the ravages of the microchip. This is what is known in our trade as a "Dog bites man" story. A journalist could grow old waiting for his real "Man bites dog" story to come along, so I will generate mine on my own.

The Labour Party announced today it had decided that, encouraging small businesses and free market economy would create far more jobs than the chip would

destroy. There was no need for new technology agreements whereby union approval would have to be obtained before new equipment was brought in, as management invariably knew more about how to run the business than the workers did. Employers should be encouraged to make people redundant since this would divert manpower to more productive sectors of the economy.

At the same time Sir Keith Joseph has decided that the best way to boost our prosperity is to nationalise all UK firms making microchips.

GILB'S MYTHODOLOGY

The Ethics method of system design

MUMFORD and Weir, of Manchester Business School, have developed a high level system design method, known as the Ethics method (Effective Technical and Human Implementation of Computer Systems).

I believe that most systems would derive substantial benefit from making use of this approach, simply because we presently give too little conscious thought to human and employee user objectives when designing computer systems.

Surely management and employee representatives are growing restless and aware that presently designed computerised systems have devoted too little thought to the ultimate users? They are just waiting for specific answers as to how to organise the system development effort in a more constructive employee-centred direction. The Ethics method gives a simple but formal checklist approach that allows all levels of non-computer-expert management and employee representative to participate in the selection of the major strategy of change.

In preparation for a speech I will give at the Infotech Non-Expert User Conference (Zurich, September 22-24) I approached the same problem, before I read the Ethics book, using my own set of tools, the Design by Objectives method, samples of which I have shown in earlier columns.

I should like to share with the

reader a part of that paper. There is an important difference between DBO and Ethics here.

In DBO we try to state all human and technical goals in measurable and quantified format.

In Ethics, all the examples of goals were stated without any measurable level of ambition, or any means of objective measurement. To be fair, I greatly admire Ethics' use of employee attitude measurement to analyse the old system shortcomings. But this is not the same as an explicit requirement to measure by survey after the new system is installed, and to meet certain employee satisfaction levels in order to declare the system a formal success.

I believe that it should be possible, without any loss of employee participative ability, to state all of your new system goals and constraints in mea-

surable format, even within the framework of Ethics. In fact I would argue that measurable goals represent a much better medium of communication between the parties involved. The employees know in a more concrete way what the level of improvement will be, and the technical system developers know the minimum levels to which they must design the system.

Instead of having an Ethics objective such as "creation of a workforce which is efficient..." (page 165, Ethics book), I think we ought to state that we plan that the employees shall average 100 customers per day with less than one error per thousand and customers slipping through the computer, and one day on-the-job training of present employees in all that is necessary to achieve such efficiency.

I hope that Mumford and Weir



Tom Gilb is an independent consultant, lecturer and author on computer topics.

Six IBM users opt for ICL ME29 kit

WITH half the customers for the 200 ICL ME29s on order being new to ICL, including six IBM users, the machine seems to be living up to ICL's expectations. The six orders, worth £800,000, are led by Victoria University in New Zealand, which has cancelled its IBM System 38 order for the ME29.

The natural growth path for IBM 370/125 users is the 4300 series, so to get department store chain Galeries Anspach in Belgium and Hertsmere Borough Council to opt for ME29s is considered something of a coup.

System 3s and System 32s are to be replaced with ME29s by sugar cane harvester manufacturer TAFE in Australia as well as Standard Tube and Lloyds Electronic in Canada. Both Canadian customers are long-time IBM users.

Galeries Anspach chose the ME29/45 because it also wants 100 of the company's 9500 series point of sale terminals and the IDMS database.

Police system

AVON and Somerset police has ordered an Intellex-11 message switching system worth £100,000 from Arbet. Due for autumn delivery, the system will handle over 60 lines and will be based on the new Digital Equipment PDP-11/44.

UK office opened

CANADIAN VDU manufacturer Vokler Craig has set up a wholly owned UK subsidiary, Vokler Craig (UK) Ltd, at Tolpits Lane, Watford, Herts. Tel: Watford (02) 40043.

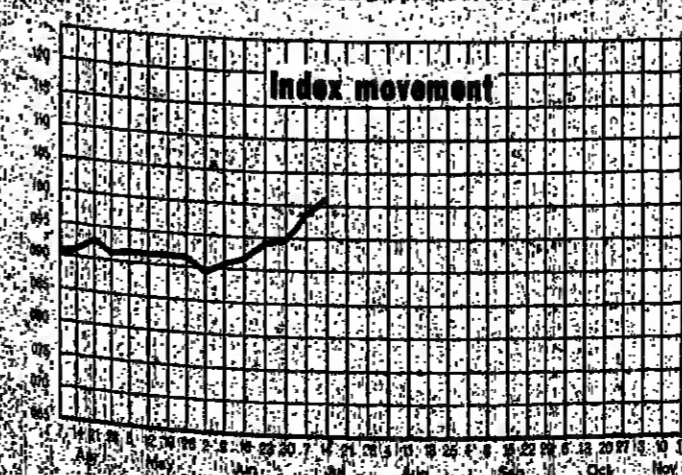
Takeover

FOLLOWING successful trading which boosted its third quarter profits 39% to \$370,000 on sales of \$4.5 million, multiplexer manufacturer Timeplex of New Jersey has taken over Carmel which has plants in California and Mexico making hybrid microcircuits for data communications.

CW SHARES TABLE

Price		London Stock Exchange		Price		New York Stock Exchange	
1980	1979	1980	1979	1980	1979	1980	1979
100	100	100	100	100	100	100	100
101	101	101	101	101	101	101	101
102	102	102	102	102	102	102	102
103	103	103	103	103	103	103	103
104	104	104	104	104	104	104	104
105	105	105	105	105	105	105	105
106	106	106	106	106	106	106	106
107	107	107	107	107	107	107	107
108	108	108	108	108	108	108	108
109	109	109	109	109	109	109	109
110	110	110	110	110	110	110	110
111	111	111	111	111	111	111	111
112	112	112	112	112	112	112	112
113	113	113	113	113	113	113	113
114	114	114	114	114	114	114	114
115	115	115	115	115	115	115	115
116	116	116	116	116	116	116	116
117	117	117	117	117	117	117	117
118	118	118	118	118	118	118	118
119	119	119	119	119	119	119	119
120	120	120	120	120	120	120	120
121	121	121	121	121	121	121	121
122	122	122	122	122	122	122	122
123	123	123	123	123	123	123	123
124	124	124	124	124	124	124	124
125	125	125	125	125	125	125	125
126	126	126	126	126	126	126	126
127	127	127	127	127	127	127	127
128	128	128	128	128	128	128	128
129	129	129	129	129	129	129	129
130	130	130	130	130	130	130	130
131	131	131	131	131	131	131	131
132	132	132	132	132	132	132	132
133	133	133	133	133	133	133	133
134	134	134	134	134	134	134	134
135	135	135	135	135	135	135	135
136	136	136	136	136	136	136	136
137	137	137	137	137	137	137	137
138	138	138	138	138	138	138	138
139	139	139	139	139	139	139	139
140	140	140	140	140	140	140	140
141	141	141	141	141	141	141	141
142	142	142	142	142	142	142	142
143	143	143	143	143	143	143	143
144	144	144	144	144	144	144	144
145	145	145	145	145	145	145	145
146	146	146	146	146	146	146	146
147	147	147	147	147	147	147	147
148	148	148	148	148	148	148	148
149	149	149	149	149	149	149	149
150	150	150	150	150	150	150	150
151	151	151	151	151	151	151	151
152	152	152	152	152	152	152	152
153	153	153	153	153	153	153	153
154	154	154	154	154	154	154	154
155	155	155	155	155	155	155	155
156	156	156	156	156	156	156	156
157	157	157	157	157	157	157	157
158	158	158	158	158	158	158	158
159	159	159	159	159	159	159	159
160	160	160	160	160	160	160	160
161	161	161	161	161	161	161	161
162	162	162	162	162	162	162	162
163	163	163	163	163	163	163	163
164	164	164	164	164	164	164	164
165	165	165	165	165	165	165	165
166	166	166	166	166	166	166	166
167	167	167	167	167	167	167	167
168	168	168	168	168	168	168	168
169	169	169	169	169	169	169	169
170	170	170	170	170	170	170	170
171	171	171	171	171	171	171	171
172	172	172	172	172	172	172	172
173	173	173	173	173	173	173	173
174	174	174	174	174	174	174	174
175	175	175	175	175	175	175	175
176	176	176	176	176	176	176	176
177	177	177	177	177	177	177	177
178	178	178	178	178	178	178	178
179	179	179	179	179	179	179	179
180	180	180	180	180	180	180	180
181	181	181	181	181	181	181	181
182	182	182	182	182	182	182	182
183	183	183	183	183	183	183	183
184	184	184	184	184	184	184	184
185	185	185	185	185	185	185	185
186	186	186	186	186	186	186	186
187	187	187	187	187	187	187	187
188	188	188	188	188	188	188	188
189	189	189	189	189	189	189	189
190	190	190	190	190	190	190	190
191	191	191	191	191	191	191	191
192	192	192	192	192	192	192	192
193	193	193	193	193	193	193	193
194	194	194	194	194	194	194	194
195	195	195	195	195	195	195	195
196	196	196	196	196	196	196	196
197	197	197	197	197	197	197	197
198	198	198	198	198	198	198	198
199	199	199	199	199	199	199	199
200	200	200	200	200	200	200	200

The table shows the closing prices in London and New York at the end of last week. The share index is based on the prices of the UK companies in the table.



TEN YEARS AGO

From Computer Weekly of July 16, 1970

A PROPOSAL for an integrated data communications system, incorporating both store and forward facilities as well as high speed circuit switched facilities, was submitted to the Ministry of Defence by Standard Telephones and Cables Ltd and British Telecommunications Research International Ltd. The proposal was for a system to be used for the transmission of data between the Ministry of Defence and the Royal Air Force. The system would be based on the use of optical fibres and would provide a high speed, reliable, and secure means of communication.

Private viewdata system goes on trial

A PRIVATE viewdata system called Metrol developed by Grund Metropolitan subsidiary Metrotech Management Technology of Uxbridge, Middx, is to go on two months' trial at the Wembley Crest Hotel in time to provide information to guests attending the 1980 Microcomputer Show at Wembley Conference Centre from Tuesday, July 22. The hotel aims to sell frames to conference organisers and local traders.

The system uses a Vector Graphics/MZ microcomputer with one editing terminal and one output port for feeding a rotating display of 30 frames through the hotel's cable television network.

Floppy disc based systems give a capacity of 250 to 400 frames, while up to 8,000 frames can be held on the mini-Winchester based version which uses a Cromemco Z2-H micro. Up to eight interactive ports can be configured at a cost of £500 on top of the basic £8,500 price.

The 28 kilobyte program is written in Basic and Z80 machine code in five modules including a database manager,

which allows interrogation to check on the frame routing structure, and an editing module which provides some text handling facilities and supports a graphics tablet for inputting drawings with a magnetic pen.

The Metrol system is designed for two main applications: local editing and bulk updating for public service information providers; and driving public displays from an in-house system. It has attracted the interest of potential dealers in Holland, Italy and Hong Kong.

Prestel picked

AFTER opting for the BBC's teletext system (CW, June 12), Austria has become the fifth country to buy the Prestel viewdata system from British Telecom. Trials are to begin in September using a GEC 4065 with 32 access ports and two 70 megabyte disc drives, a smaller system than the 4082 used in the UK and elsewhere. The software is being supplied via TTT Austria.



Disk packs from Control Dataset.

Because you can't choose better than the world's biggest brand.

The Control Dataset label on a disk pack reflects its maker's system/drive/head/media technology capability. Control Dataset is the world's largest supplier of scientific and engineering computer systems. The leading supplier of OEM peripherals, particularly of disk drives. The biggest manufacturer of disk packs and cartridges. With large-scale U.K. manufacturing facilities, for full quality control and maximum availability.

For exclusive supplies of CDC and ICL label magnetic media contact Control Dataset. You'll gain the services of Britain's most extensive and experienced sales and technical support force.

You can't choose more wisely than the biggest names in disk packs and cartridges, from the U.K. industry's largest supplier.

Call Control Dataset on 0438 3989, today, or write to Control Dataset, Limited, P.O. Box 16, Argyle Way, Stevenage, Herts. SG1 2AB.

Pitfalls of contract programming...

THE opinion commonly held in the industry about contract programmers is that they are overpaid, but very valuable. At a time when the right calibre of qualified staff is needed with increasing urgency, employers have to rely more and more upon the services offered by freelance programmers for speedy solutions to their staff problems, and have to pay accordingly.

Becoming a contract programmer is a dream held by many programmers working away in small under-paid installations. The money, the variety of work and the wonderful feeling of being self-employed is a great attraction.

Martin Levy, at 22, was enjoying such a life and although his story may be amusing it raises some interesting points about the risks a contract programmer takes.

When Martin received a telephone call from his agency asking him to work in Rome on a PDP-11 contract for the European Space Agency, naturally he agreed and within three weeks was off, so he thought, for six months.

A luxury flat in the hills just outside Rome, £300 a week and a job-setter's lifestyle sounds like a programmer's dream. Unfortunately for Martin it was short-lived and the flat-slopes a mile and a half away from his home were ultimately his downfall.

An accident while skiing resulted in a badly broken leg, and with little trust in Italian doctors Martin chose to fly back to the UK for treatment. Luckily for him, after five weeks he was fit enough to hobble back on crutches to his job in Italy where his employers had agreed to hold his contract.

Breaking a leg is unfortunate, or even funny, depending on how you look at it; breaking two legs is even the same leg twice as downright ridiculous.

Martin's employers could not be persuaded to see the funny side when he rang to tell them

his "you're not going to believe this" story of how he had broken his leg again, inside the plaster, in a car accident.

The spiral fracture that occurred during the second accident meant it was impossible for Martin to stay in his apartment and his lack of faith in the local doctors necessitated a further return to the UK — which meant that he lost the contract.

Consequently, Martin is in the unenviable position of having a broken leg and being out of work. Therefore anything he applies for has to be in reasonable travelling distance of his home.

Martin's misfortunes are as unlucky they can raise a smile. But the whole incident also raises some pertinent questions about the security of a contracting job.

For example, although there is a reciprocal health agreement which in theory enables a British citizen to obtain medical treatment in an EEC country free of charge, in practice this is difficult to do and obviously someone with a broken leg in no position to run around obtaining all the relevant forms before he goes into a hospital.

Also, the tax arrangements for a Briton working for a UK company abroad are very complicated, but basically if you stay abroad for some time, eg a year, you are not eligible to pay English or foreign tax. If the period of work is considerably less, you have to pay quite a substantial sum in tax after your return.

The other important thing to remember is that contractors are virtually self-employed and consequently do not pay national insurance. Therefore they are not eligible for sickness or unemployment benefit and when accidents do happen the contract programmer is left with very little to fall back upon.

If you're healthy and lucky then contracting is ideal, but for the accident-prone the pitfalls of contract work are as many as the advantages.

Martin is hoping to claim loss of earnings and personal injury insurance from an Italian company as a result of the car accident, but in many other respects, all costs will have to be borne personally.

Someone who is not entitled to unemployment benefit is eligible for social security payments, but for someone who had recently been earning £300 a week, these would be minimal.

"In theory," he says, "I'm a much wanted commodity. In practice it just doesn't work like that."

Martin is currently considering jobs which he otherwise would not have taken, but even these "boring" or "unattractive" contracts are worth about £250 a week. While employers are desperate enough for the right sort of staff, this trend will no doubt continue.

In DP, the career ladder usually means the unimagined progress from programmer to systems analyst and then into management. As Martin said: "I enjoy being a programmer. I don't want to be anything else."

So if you are a programmer, and they are in short supply as everybody knows, and you are also a very good one, why should you become an average systems analyst or a poor manager?

Page Six will be pleased to hear your views.

Puzzler

WHERE n points can be arranged on a plane surface in the form of a triangle, n is referred to as being a triangular number. The first such number (apart from 1) is 1 + 2 = 3, the second is 1 + 2 + 3 = 6, and the third is 1 + 2 + 3 + 4 = 10. When n is also a square, the number in question is called a square triangle, and the first three of these are 1, 36 and 1225. All this is leading up to this week's problem, which is:

The smallest integral right triangle with two sides "consecutive" is 3-4-5, and the next largest is 20-21-29. What is the third largest such triangle? See page 37 for solution.

Emergency service for pre-printed forms

AN emergency service for pre-printed forms has been started by Oyez, the publishing arm of the Solicitors' Law Stationery Society Ltd.

It specialises in small to medium sized continuous stationery runs and guarantees a delivery period of three to four weeks against the normal eight to 10 weeks. Form depths vary between three and 18 inches.

Oyez also says it can provide vital forms such as pay slips, invoices, or dispatch notes within days. All processes, including design, setting, articulating and printing, can be done in-house and orders can be delivered either by its own vans or via British Railways' Red Star service.

Further details from Oyez, Freeport, London, SE1 4PU. Tel: 01-407 8058.

OP SPOT

Why Paul finds it difficult to get work after an NCC course

LIVING in the high unemployment area of Merseyside can be very frustrating when you're young and keen to make a start on your career.

That's certainly true in the case of Paul Bryers, an intelligent, well-educated 18-year-old who is trying to break into the computer industry. Five months after acquiring his NCC Threshold Certificate in Data Processing at St Helens College of Technology, Paul is still unable to find a job as a junior operator.

It's certainly not due to a lack of effort. He told me: "I've written to 40 or so companies, completed 10 application forms by return and attended four interviews. But so far, nothing."

He's also taken aptitude tests at three of the four, and passed them all and told the interviewer concerned about the subject matter he studied at the college.

Jack Bell, who is responsible for the personnel side of the Threshold courses at St Helens College, told me: "Unfortunately Paul is one of many who are looking for work in the Merseyside area."

"Firms have to advertise internally before looking outside. This applies to all areas of industry, not just DP."

According to Bell, Paul was very keen on becoming a programmer when he started the 10-month course in last year.

But Bell and David Fitch, head of the DP Division at the college, thought he would be better by concentrating on operating and moving away from programming after he had gained more experience.

"Paul's a bright lad — intelligent and did very well at school. However, he tended to ask enough questions on course. As we see it, it's essential for programmers to communicate with systems analysts as well as having the ability to work on their own."

"I do tell students that they can move into other areas of employment, but what they really want is a very difficult."

Just in case there are any Merseyside sites looking for a junior operator, here are some details: He has GCSE's in English, Language, Mathematics, Physics, Chemistry, Geography, and holds a NCC Threshold Certificate in Data Processing. His address is Wheelfield Road, Chester, W22 1DN, Cheshire. Tel: 051 7021.

BERNARD ADAMS

SOFTWARE FILE

Banking 'totally dependent' on DP

BANKING in the 1980s is overwhelmingly dependent on computer power, and a big clearing bank's lifeline is its computer network. In the heart of Lloyds Bank's computer centre, Samson House on the south side of Bishopsgate in London, the bank's major networks are controlled.

The most important is the branch network and 70% of this is normally supported by one IBM 370/168. The machine stores the daily memo file for the Cashpoint cash dispenser network, which is updated overnight with the close-of-day balance of each account.

The remaining 30% of the network is on a second 370/168, together with the overseas regional branch network plus all Lloyds traffic on the Swift Interbank funds transfer network. The third network is what Lloyds calls the system shop network, a facility for divisions of the bank to get access to a computer for their own work.

Users include the planning section, investment appraisal, the leasing department, the insurance department and others. IBM's VSPC, virtual storage personal computing, "We don't allow people to buy their own minis," comments management services manager Jack Dunn.

Since IBM has enhanced the conversational monitor system, CMS, under the VM/370 operating system, many people regard this as a much easier to use and more attractive personal computing facility than VSPC.

Lloyds has protagonists for and against VM, but does not yet consider putting the operating system up to be worth the effort. Although Lloyds is often seen as a 100% IBM shop, there is a fair amount of non-IBM equipment at Samson House, notably the Medius network monitoring system from International Aeradio.

Within the network control centre, the line control section looks after arranging for repair of faults, and also gives guidance in use of the network, acting as the liaison point for branches and users.

The TP control section is responsible for monitoring the TP programs to ensure that they are running efficiently, that there is no interference between applications and to ensure network recovery after failures.

Lloyds is running both the line and the TP control sections and releases two of the network's communication control programs which are part of IBM's portfolio.

Saving time, money — Lloyds in design time and when costs are quoted — mathematical modelling and simulation techniques developed by Fraser Nash of Kingston, Surrey.

Getting most from PoS

FROM NCR is a package which allows retailers to extract data for stock control, ordering and delivery planning. It also handles sales, stock, reporting, department sales, stock margin reporting, sales performance and forecasting in-house from PoS.

Series 1 processors and is operated interactively via video terminals. Operation is simplified via the use of menus. NCR says the package will provide retailers with improved stock control and delivery planning, and forecasting information. It is available for a single licence fee of about £10,000.



The small room shown here is the nerve centre of Lloyds Bank's nationwide network.

Set theory way to info management

THE only way to build an information management system as opposed to a database management system is to implement a complete separation of the logical and the physical views of the database. The way to achieve this is to apply modern set theory.

So says Dave Childs of Set-Theoretic Information Systems, a company established in 1979 with the purpose of developing a back-end set processor.

Sets have been defined as an arbitrary collection of "definite and distinct" objects, a definition which was soon rejected as too general, but no successful precise definition has been agreed.

Speaking at the Online Future Systems Forum last week, Childs underlined the inadequacies of present day database management systems: the definition of data models — Codasy, hierarchical, relational and so forth — were really different user views or the data. Normally the user was confined to one model, one organisation and one access method.

"For a true information management system we want to be able to combine any model and any organisation with any access method."

"Information management should be in the hands of the user, database management should be confined to logical organisation, physical organisation should be under storage management, with system performance management optimising use of multiple access methods, and handling network communication."

"Only then do you have a truly data independent system," said Childs. "Set processing recognises data organisations as mathematical sets, with every data set and file a recognisable set. And the basic set operations are combined to perform the familiar database operations."

"Data independence is achieved by allowing only well-defined set expressions to cross the boundaries between the logical and the physical. The set processor can be a front end, can be host resident, or can be a back end processor, where the host becomes the logical user."

"Multiple hosts can share a back end set processor and set processors can be linked to build distributed databases." Childs believes that the set processor could be designed on a single chip, and the company hopes to have a front-end set processor on the market next year.

Easy-to-use inquiry and reporting pack

AN ENGLISH language inquiry and reporting package that is said to allow users to write their own programs with little or no computer training or knowledge, is due for launch by the National Computing Centre in the autumn.

Called Useraid, it was written following feedback from professional people, such as accountants, and an NCC spokesman said it would also be suitable for installations with many user departments.

It was written for NCC by FSS who provided the programming effort under contract. Initially Useraid will be available for IBM 360 and 370 as well as ICL 1000 and 2000 slices which do not use VME/B. A Level 06 version, planned for release in autumn, is being written in conjunction with Honeywell.

The spokesman added that Useraid should also work on IBM compatible kits such as that made by Amdehl, and that initial marketing effort would be aimed

at the existing 1,000-plus Filetab installations.

The principal features of Useraid include:

1. automatic formatting of up to 23 reports from one pass of data files (each report may include its own integral SORT);
2. condition testing and calculation with automatic creation of new data items;
3. optional creation of an inquiry statistic report which allows video users to print reports selectively after browsing through a file; and
4. optional multi-level PASSWORD protection.

Three-year plan

A THREE year changeover to Cincom's Total database management system is planned by Associated Bank Publishers. Included in the £30,000 deal is the Task online database inquiry system. It will all run on an NCR based Criterion system.

XODIAC. THE MODERN VERSION OF AN ANCIENT COMMUNICATIONS NETWORK.



Until now, networking has been a lot of smoke without much fire.

Now there's the XODIAC Network Management System. Data General's new, user-transparent network software, XODIAC lets you hook up any number of AOS-based ECLIPSE systems and keep your entire DDP operation right under your thumb. You can even add our other communications products to access other systems.

XODIAC user-transparency means no network-specific programming, less reprogramming, and more control for you. No other computer company can give you networking software that's easier to use.

And XODIAC communications are based on the internationally recognised X.25 protocol from CCITT so you can access public data networks like Telenet in the U.S., Datapac in Canada, and Transpac in France.

XODIAC Network Management System. It works. For more information, call or write, or send in the coupon.

Data General

Over 700,000 computers in use worldwide.

For more information, call or write, or send in the coupon.

Name _____

Address _____

City _____ State _____ Zip _____

Country _____

COMPUTER-AIDED PRINTING AND PUBLISHING CONFERENCE

September 9-10, 1980, London, Royal Lancaster Hotel
 Conference Chairman: Gilbert A. Smith
 Joint Conference Secretaries: S. Chomet, University of London King's College
 N. J. Benwell, Cranfield Institute of Technology
 Technical Adviser: J. F. Slater

DAY ONE

1. INTRODUCTION BY THE CHAIRMAN
2. FUNDAMENTALS: What is Publishing in the 1980s? Computer publishing: the technology and its role in the publishing industry
3. THE FUTURE OF PUBLISHING: The role of the computer in the publishing industry
4. THE FUTURE OF PUBLISHING: The role of the computer in the publishing industry
5. THE FUTURE OF PUBLISHING: The role of the computer in the publishing industry
6. THE FUTURE OF PUBLISHING: The role of the computer in the publishing industry
7. THE FUTURE OF PUBLISHING: The role of the computer in the publishing industry
8. THE FUTURE OF PUBLISHING: The role of the computer in the publishing industry
9. THE FUTURE OF PUBLISHING: The role of the computer in the publishing industry
10. THE FUTURE OF PUBLISHING: The role of the computer in the publishing industry

DAY TWO

1. THE FUTURE OF PUBLISHING: The role of the computer in the publishing industry
2. THE FUTURE OF PUBLISHING: The role of the computer in the publishing industry
3. THE FUTURE OF PUBLISHING: The role of the computer in the publishing industry
4. THE FUTURE OF PUBLISHING: The role of the computer in the publishing industry
5. THE FUTURE OF PUBLISHING: The role of the computer in the publishing industry
6. THE FUTURE OF PUBLISHING: The role of the computer in the publishing industry
7. THE FUTURE OF PUBLISHING: The role of the computer in the publishing industry
8. THE FUTURE OF PUBLISHING: The role of the computer in the publishing industry
9. THE FUTURE OF PUBLISHING: The role of the computer in the publishing industry
10. THE FUTURE OF PUBLISHING: The role of the computer in the publishing industry

SPEAKERS

- GILBERT A. SMITH, Chairman of the Council, Institute of Printing, and Secretary-General of the CIPD
- JOHN BIRNBAUM, Chairman of the Council, Institute of Printing, and Secretary-General of the CIPD
- JOHN BIRNBAUM, Chairman of the Council, Institute of Printing, and Secretary-General of the CIPD
- JOHN BIRNBAUM, Chairman of the Council, Institute of Printing, and Secretary-General of the CIPD
- JOHN BIRNBAUM, Chairman of the Council, Institute of Printing, and Secretary-General of the CIPD
- JOHN BIRNBAUM, Chairman of the Council, Institute of Printing, and Secretary-General of the CIPD
- JOHN BIRNBAUM, Chairman of the Council, Institute of Printing, and Secretary-General of the CIPD
- JOHN BIRNBAUM, Chairman of the Council, Institute of Printing, and Secretary-General of the CIPD
- JOHN BIRNBAUM, Chairman of the Council, Institute of Printing, and Secretary-General of the CIPD
- JOHN BIRNBAUM, Chairman of the Council, Institute of Printing, and Secretary-General of the CIPD

CAPP 80 COMPUTER-AIDED PRINTING AND PUBLISHING

Please complete and send to: The Conference, Unit 10, 12 Haverhill Street, London, W.C.1. Tel: 01-407 8058. Fax: 01-407 8059.

Name _____

Position _____

Address _____

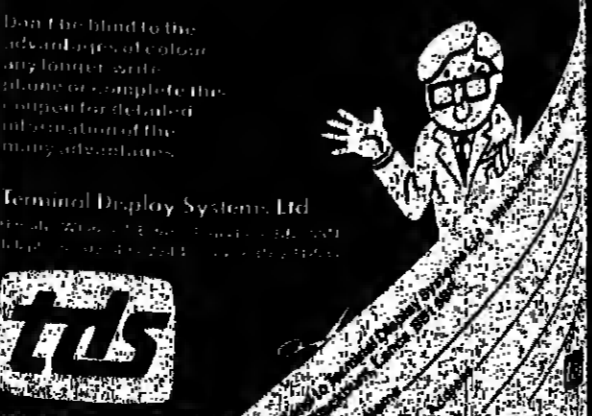
City _____ State _____ Zip _____

Country _____

Telephone _____

COLOUR BLIND?

Get Better
 Get Better
 Get Better
 Get Better
 Get Better
 Get Better



General Display Systems Ltd. 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200.

PEOPLE and EVENTS

Ex-Govt thinker joins Urwick

FOR two years a member of the Government Think Tank, Carolyn Hayman has now joined the systems research team at Urwick Nexos.

Hayman (right) specialised in the application of microelectronics while on the Think Tank, and her work there included studies into their social and employment impact, on the impact of technological change on employment, and on education and training in relation to industrial performance.

A team of which she is a member at Urwick Nexos is developing methodologies for analysing



business systems and office-based activity. She has also been invited to give evidence to the House of Lords Select Committee on Unemployment, which is considering the effect that microelectronic technology will have on the level of employment.

Stephen Madden has been appointed hotel support representative with Monotype communications hotel systems division in Leeds. His first job was computer training coordinator with Trust House Forte.

Jerry Causley, previously UK sales director of CMC, has been appointed managing director of CMC Leasing. Carl Heppell, head of customer service at CMC, and Richard Gamble, CMC's chief financial officer, have been appointed to the board of CMC Leasing.

Dick Barnes, formerly marketing manager of the Co-op's computer group, has been promoted to general manager and head of the group.

Trevor Walls, customer engineer with Rediffon Computers' South-East branch, has been promoted to customer services supervisor for the branch.

Francis Hardie of Rediffon Computers has been promoted from area sales manager for the Southern branch to branch manager for the Midlands branch. Michael Draper has joined Rediffon as area sales manager for the central accounts South of England branch, from Four Phase Systems where he was a regional sales manager.

Formerly an account manager with Nixdorf in Australia, Barry Lynch has become senior territory manager for central accounts North of England branch, with Rediffon. Peter Fairweather, who was until recently a customer engineer with ICL, has joined Rediffon as an engineering lecturer.

John Lambert has become finance director and company secretary at Memorex, after six years with the P & O group as group management accountant and finance director of the energy division.

Marketing support man for Honeywell division

HONEYWELL has appointed a director of marketing operations in its general systems division. He is Peter Smith, who until recently was NCR's sales manager for the industrial sector in South-East England.

Most of Smith's career has been spent with NCR, and it has included some time in Lagos as regional sales manager for Nigeria.

Richard Powson, until recently editor of Printout, has joined Honeywell as a senior consultant, was previously a consultant in the basic software division of Logica's communications group.

Robert Anderson, who has joined GST Computer Systems as a senior consultant, was previously a consultant in the basic software division of Logica's communications group.

Alan Page is the manager of Oceanic's newly-formed graphics system division; he was a sales director with Engineering Computer Services.

Spike Kasper, general manager of Vydec UK, has been appointed managing director.

Phil Thompson has joined Monotype Communications as sales analyst, from Oyez Computers where he was a sales consultant. Lucy Evans, previously a word processing operator with Chemical Systems International and Lloyd's Register of Shipping, has become market support representative with Monotype, and Edward Croucher, who was formerly a programmer project leader, has become project leader, communications, with Monotype.

Michael Harrio has become managing director of MAI, after eleven years at Univas where he was manager responsible for sales and support to banks, insurance companies, building societies, commodity brokers and finance houses.

George Robart, until recently a director of Slinn Systems and of Law Data Systems, has been appointed general sales manager of Scope Data Systems.

Dr Emma Bird, a behavioural scientist who was formerly with Communications, Studies and Planning Ltd, has joined the systems research group at Urwick Nexos.

Giving us a call now could be your first positive step to getting financial support for training computer programmers and systems analysts.

We have now introduced a further scheme for grants to employers for sponsoring trainees on a range of courses in the field.

But the number of grants available is limited, so the sooner you phone us the sooner we can start to help you.

THE MSC CAN HELP NOW.

Training Services Division
Manpower Services Commission

WHEN YOU RING THESE NUMBERS.

ENGLAND AND WALES: 01-214 6603/01-214 6690/01-214 6197
D 031-225 8500 - EXT 213



PoS advice from Eric Foster

A SPECIALISED service offering advice on the retail trade systems is provided by Eric Foster. Services, recently set up by Eric Foster, he joined from Pinesy Rowan with the starting ICL off in the point of sale line. He was project manager for the 1000 during his development and launch, and has been manager of the applications group in ICL's n.r. 2 division.

The address of Spectra Services, Keybridge Cottages, Wokingham, Hurst, Berks RG10 0RA. Tel: 0734 3444.

Ian Andrews, business systems manager of Alan D'Morais and Associates, has been appointed technical director of the London office. Bob Pierce has joined the company as sales consultant for turnkey systems, from Computel where he was a sales consultant. Jack Anderson, previously a territory manager in Scotland with Burroughs, has become ADM's minicomputer division manager, responsible for turnkey systems in Scotland.

Dr Robert Peat has been appointed executive vice-president and operating officer of the UK American Microsystems Inc. He is replaced as managing director by Richard Thomas, who has been appointed as managing director of the company's UK operations.

Jim Gilbey, previously of Mainline, has joined Calsil as sales manager of the UK. He is replaced as sales manager by Zilog and RCA, and the UK has become Motorola's sales manager with Calsil. He has several years at Calsil, lecturing in electronics.

Ian Makepeace has been appointed sales manager of Dalt Equipment's new UK sales operation.

Commodore Data has come senior sales executive Ferranti's naval sales team. He was in the UK for years, and commanded the Thames, Den and York.

Dr Emma Bird, a behavioural scientist who was formerly with Communications, Studies and Planning Ltd, has joined the systems research group at Urwick Nexos.

SOCER

THE draw for the second round of the Summer Computer League Cup is as follows:

NCR 'A' v Kingston's
Forty v Japdu 'A'
BAC v Ashbourne
Gryphon v Post Office
Computer Weekly v Comshare
NCR 'B' v Japdu 'B'
Ventek v SII
SIA v Logica

There are an awful lot of league match results which haven't been reported to us. Would the respective team captains please put this right!

DIARY

JULY 21
Solution of linear programming problems with staircase structure. Prof O. R. Madden, BCS PL/I group, BCS Mathematical Study Group, London School of Economics, London WC2 2LS.

JULY 24
The Talmud operating control system. Tony Smith, BCS PL/I group, BCS Mathematical Study Group, London School of Economics, London WC2 2LS.

SEPTEMBER 14
Local and microprocessor system design. Computer Lab, University of Liverpool.

SEPTEMBER 14
Local and microprocessor system design. Computer Lab, University of Liverpool.

SEPTEMBER 14
Local and microprocessor system design. Computer Lab, University of Liverpool.

SEPTEMBER 14
Local and microprocessor system design. Computer Lab, University of Liverpool.

SEPTEMBER 14
Local and microprocessor system design. Computer Lab, University of Liverpool.

SEPTEMBER 14
Local and microprocessor system design. Computer Lab, University of Liverpool.

SEPTEMBER 14
Local and microprocessor system design. Computer Lab, University of Liverpool.

SEPTEMBER 14
Local and microprocessor system design. Computer Lab, University of Liverpool.

SEPTEMBER 14
Local and microprocessor system design. Computer Lab, University of Liverpool.

Weather service for yacht clubs

TED HEATH was present at the launch by Naxos and the Meteorological Office of a facsimile-based weather forecasting service aimed at yacht clubs. The Met Office now offers a standard basic service for £100 a month which consists of sending a UK weather map with general and local comments to subscribers twice a day on a Naxos 8400 high speed analogue facsimile transceiver which rents for £90 a month.

Heath was sceptical about clubs' willingness to pay this much, but his interest was aroused at the suggestion that later enhancements could include retransmission by radio to a shipboard unit costing about £800.

Our picture shows a weather map being received at a sailing club from the Bracknell Centre.

Work-for-disabled group seeks help

HELP is needed to keep a group of disabled data-prep operators in business. Set up three years ago as a limited company, the group aimed to succeed in normal commercial operation at the same time as providing employment for physically handicapped and able-bodied people together in computing.

Its name, Emphatic Computer Services, is an acronym of this aim. For a time, the company did well.

"However, our ambition has not been matched by our business acumen," explained one of the three founders, Ron Potter, formerly a service engineer for Kodak. "And we are in danger of sinking without trace."

"We had a steady key-to-paper-tape data preparation contract, but the company has now moved production abroad and we have lost it. We are losing our temporary office because it is to be redeveloped and we cannot afford the going rate for office space."

"We are in the process of gaining charitable status so that we can attract direct aid and we need help with an office, money, management or marketing skills, equipment such as key-to-diac systems, or anything anyone can offer."

"We would like to break into programming. We have a Cobol video training course that came from the US via Vauxhall Motors - we use this for introductory training at the Young Disabled Unit at Stoke Mandeville Hospital, where the other directors, Derek Nicholson and Bob Hunter, who are both paraplegic, spend much of their time. We could do with some advice on how to get the work, and price it."

From the introductory course, trainees go on to Queen Elizabeth College in Leatherhead, which offers full instruction.

Emphatic Computer Services can be contacted at St Andrews Way Industrial Estate, Bicester Road, Aylesbury, Bucks. Telephone Aylesbury (0298) 27883.

Emphatic Computer Services can be contacted at St Andrews Way Industrial Estate, Bicester Road, Aylesbury, Bucks. Telephone Aylesbury (0298) 27883.

Emphatic Computer Services can be contacted at St Andrews Way Industrial Estate, Bicester Road, Aylesbury, Bucks. Telephone Aylesbury (0298) 27883.

Emphatic Computer Services can be contacted at St Andrews Way Industrial Estate, Bicester Road, Aylesbury, Bucks. Telephone Aylesbury (0298) 27883.

Emphatic Computer Services can be contacted at St Andrews Way Industrial Estate, Bicester Road, Aylesbury, Bucks. Telephone Aylesbury (0298) 27883.

Emphatic Computer Services can be contacted at St Andrews Way Industrial Estate, Bicester Road, Aylesbury, Bucks. Telephone Aylesbury (0298) 27883.

Emphatic Computer Services can be contacted at St Andrews Way Industrial Estate, Bicester Road, Aylesbury, Bucks. Telephone Aylesbury (0298) 27883.

Emphatic Computer Services can be contacted at St Andrews Way Industrial Estate, Bicester Road, Aylesbury, Bucks. Telephone Aylesbury (0298) 27883.

Emphatic Computer Services can be contacted at St Andrews Way Industrial Estate, Bicester Road, Aylesbury, Bucks. Telephone Aylesbury (0298) 27883.

Emphatic Computer Services can be contacted at St Andrews Way Industrial Estate, Bicester Road, Aylesbury, Bucks. Telephone Aylesbury (0298) 27883.

Emphatic Computer Services can be contacted at St Andrews Way Industrial Estate, Bicester Road, Aylesbury, Bucks. Telephone Aylesbury (0298) 27883.

Emphatic Computer Services can be contacted at St Andrews Way Industrial Estate, Bicester Road, Aylesbury, Bucks. Telephone Aylesbury (0298) 27883.

Emphatic Computer Services can be contacted at St Andrews Way Industrial Estate, Bicester Road, Aylesbury, Bucks. Telephone Aylesbury (0298) 27883.

Emphatic Computer Services can be contacted at St Andrews Way Industrial Estate, Bicester Road, Aylesbury, Bucks. Telephone Aylesbury (0298) 27883.

Emphatic Computer Services can be contacted at St Andrews Way Industrial Estate, Bicester Road, Aylesbury, Bucks. Telephone Aylesbury (0298) 27883.

Emphatic Computer Services can be contacted at St Andrews Way Industrial Estate, Bicester Road, Aylesbury, Bucks. Telephone Aylesbury (0298) 27883.

Emphatic Computer Services can be contacted at St Andrews Way Industrial Estate, Bicester Road, Aylesbury, Bucks. Telephone Aylesbury (0298) 27883.

Emphatic Computer Services can be contacted at St Andrews Way Industrial Estate, Bicester Road, Aylesbury, Bucks. Telephone Aylesbury (0298) 27883.

Emphatic Computer Services can be contacted at St Andrews Way Industrial Estate, Bicester Road, Aylesbury, Bucks. Telephone Aylesbury (0298) 27883.

Emphatic Computer Services can be contacted at St Andrews Way Industrial Estate, Bicester Road, Aylesbury, Bucks. Telephone Aylesbury (0298) 27883.

Emphatic Computer Services can be contacted at St Andrews Way Industrial Estate, Bicester Road, Aylesbury, Bucks. Telephone Aylesbury (0298) 27883.



Olivetti adds to bottom end

OLIVETTI Computers has added a bottom end model to its OC 5300 line of medium scale IBM-compatible mainframes. The OC 5300 line comes from IPL Systems in which Olivetti now has a 33% stake. According to the Italian weekly computer paper Linen EDP, the OC 5310 can have up to four megabytes of main memory. It is aimed at IBM's new 4331 Model Group 2 and is field-upgradable to the 5320 and 5330.

Call to halt dumping of video kit

UK audio-visual manufacturers are involved in a "trade war" with Far East companies, and it has already cost the UK industry some 30,000 jobs, according to figures from the electronics union, the EETPU.

To prevent further losses a UK delegation last week lobbied the EEC Commission in Brussels, seeking import controls on audio-visual equipment from Far Eastern countries.

The joint union manufacturer delegation, including representatives from EETPU, ASTMS, TGWU, Philips, Thorn and Rank, is lobbying for immediate controls on imports from Thailand.

It was the promised import of 200,000 monochrome television sets from Thailand which prompted EETPU national officer Roy Sanderson to form the delegation.

Sanderson commented, "We told the commission that the UK industry needs time to restructure and become more competitive."

COMPUTER WEEKLY is holding its Annual Ball on Friday, October 10 at the Royal Lancaster

Computer Weekly is holding its fifth annual Ball. Last year nearly 700 people - attended what has come to be regarded as the computer industry's big night out.

This year the Ball will again be held under the patronage of the British Computer Society. And proceeds will once more be devoted to a deserving cause associated with the computer industry.

So why not help us to help others? And at the same time enjoy a pleasant evening with friends and colleagues.

COMPUTER WEEKLY Annual Ball

Order form

Tickets are available at £10 for a single ticket, included in the price is a dinner, cabaret and dancing until 2 a.m.

Please send me: single tickets at £10 per head (enter number required).

Please reserve: table(s) for me (10 places at £10 per head).

My cheque for £: is attached. (Cheques should be made payable to IPC Business Press)

Please send the tickets to me at the following address:

Name: _____

Company: _____

Address: _____

When completed, this order form should be returned together with your cheque to Harry Hulton, Advertisement Manager, Room 13, Dorset House, Stamford Street, London SE1 9LU.

NEW FROM NASHUA



ORDER NOW

FASTEST KEY MAN IN THE UK

COMPUTER JOBS AGENCY

USED TO UNITS HOURS CAN SAVE

A NEW WAY OF WORKING

PERFORMANCE

NASHUA QUALITY

September training

Book your place now.

Project Supervision	14-19 September
Practical Speaking skills	8-10 and 13-15 September
Effective writing	1-3 September
Advanced Datapoint operations	16-18 September
VME/B Basic Operations	1-5 September
VME/B Advanced Operations	22-26 September
2900 VME/B SCL	15-19 September
Teleprocessing	11-12 September
MVS Basic Operations	22-26 September
MVS Advanced Operations	15-19 September
OS/VS JCL	8-12 September
OS/VS Utilities	15-17 September
VSAM/IMS	22-24 September

For more information contact: BOC Datasolve Education,
9 Rochester Row, London SW1 1LA. Telephone: 01-828 8104.
Let our training take the strain.

MICRO NEWS

by Eileen Stalner

IBM building small Josephson system

RESEARCH by IBM into Josephson high speed LSI technology has progressed to such a degree since it was announced last year (CW, May 24, 1979) that the design and construction of a small prototype computer system is currently under way. IBM has published a special research project on Josephson computer technology.

Scientists at Zurich, East Fishkill and the Thomas J. Watson Research Centre at Yorktown Heights, New York are involved in the present programme.

Among the topics discussed are materials and process studies, logic and memory circuit design, modelling, fabrication, testing and packaging.

Once the development is completed the Josephson devices will have the potential to outperform the current silicon technology and another potential future technology, gallium arsenide, in both speed and power factors.

During research, a feasibility

study was carried out on a 16K-bit RAM using 4,500 Josephson junctions arranged on a 40 millimetres square chip.

Measured results included an access time of 10 nanoseconds with a power consumption of 40 microwatts. These compare with 200 nanoseconds access time and 475 milliwatt power consumption values of current silicon-based 16K static RAMs.

This Josephson device developed in the research are fabricated similarly to semiconductor LSI chips, using photo, electron and X-ray lithography. Their packaging has to cope with an operational temperature four degrees above Absolute Zero temperature (-273.15°C). This factor enhances the packaging techniques as bulky cooling structures are not needed to remove the heat.

Scientists are working towards a hypothetical mainframe capable of executing 250 million instructions per second with a main RAM capacity of 64 Mbytes. This could produce mainframes with computing rates 10 to 100 times higher than that of an IBM 3033 mainframe system.

Further information can be obtained from the Information department of IBM (UK) Ltd (CW) PO Box 41, North Harbour (Baltic House), Portsmouth PO8 3AU.

Threat to US personal market

JAPANESE personal computers are expected to capture a third of the US personal computer market within the next five years. Recent competitors Hitachi, Matsushita, NEC, Oki Electric and Sharp have already released the IBM PC compatible models.

The reason given for the Japanese success is that their models are lower priced at \$750 to \$1,200. Hitachi's Basic Model III and Oki's IF800 are said to be technically advanced compared to the US personal computers, while Sharp's PC 1211 is the most portable (CW, July 3). Not surprisingly, IBM has also released its own personal computer, the IBM PC 125.

Matsushita hopes to market its Panasonic model through dealers and NEC plans to introduce its PC8001 on to the US market. Ironically, important design work of some of the new Japanese models was carried out by Microsoft while the signed software for some of the US models.

Second volume

VOLUME 2 of the Manual of Microcomputers is available from Macintosh Publications (CW), Napier Road, Luton, LU1 1RG, for £75. It collates previous issues in microelectronics and was first recorded in the newsletter Microcomputer Analysis.

Harris micro offshoot to make gallium chips

HARRIS is to form a semiconductor company, Harris Microelectronics, to produce integrated circuits based on gallium arsenide technology.

This follows Fulltan's announcement that it has successfully tested high electron mobility transistors using gallium arsenide and gallium aluminium arsenide (CW, June 26).

Six Hewlett-Packard engineers have left the company to form the Harris subsidiary, which is to be based in Mountain View, California.

Harris is also developing a version of Intel's 8086 using a technology of a double layer of polycrystalline silicon. Three micron geometry. The device will have a power consumption of 100 mW, less than the NMOS version.

A similar study is being carried out with the 8748, a version of the 8048. Intel says it is shipping 100,000 8088 a month.

Digital Equipment has signed an agreement with Harris to produce a CMOS version of the LSI 11.10 microcomputer.

Access Data distributors for QUME FACIT SYSTEMS

We offer:
• Installation & commissioning by our own engineers
• Service & maintenance by our own engineers
• On site warranty
• Rapid call-out on breakdown
• O.E.M. suppliers

Access Data Communications Ltd
228 High Street, Chester
Merseyside, CH1 1JL
Tel: 051-224 3306

TIM PALMER AND KEITH JONES REPORT ON THE FUTURE SYSTEMS FORUM IN LONDON WHERE LEADING INDUSTRY FIGURES ANALYSED INFORMATION SYSTEMS DEVELOPMENT, AND TRIED TO FORECAST THE TRENDS OF THE 80s

'Three more IBM series to be launched by 1980'

THREE more IBM series beyond the E and H-series have been identified by Bob Fertig of Advanced Computer Techniques in New York, for announcement between 1982 and 1988.

The G-series, offering 1.5 to 10 MIPS and costing between \$250,000 and \$1.5 million, provides the growth path for the 4300s, he told the Future Systems forum in London.

"But the G-series may never appear, because as products like the H-series are delayed, so they start bumping up against the planned next generation product, and a further extension of the 4300 line, beyond the 4341 Model Group 2, expected later this year, might fill the gap until the Olympia series turns up to replace the 4300 in 1984-85."

Fertig expects the Olympia series to be in the 0.3 to 1.1 MIPS power range and to cost between \$40,000 and \$150,000. Successing and extending the power of the H-series, he expects the Sierra series, a range of supercomputers in the 10 to 50 MIPS range and costing between \$1.5 million and \$5.8 million.

These predictions are based on leaks of what IBM is currently working on and things can change substantially between now and the planned launch dates. Prices are ACT forecasts.

Fertig expects the H-series to cover the 3 to 27 MIPS range, with prices from \$1 million to \$6 million. He also sees it as a modular mix and match system, with the 27 MIPS Sentinel system having four processors and two System Control Units.

The Sentinel model he sees as being configurable for example with two System Control Units, one supporting two processors and the other one for a 20 to 22 MIPS rating.

Some people still doubt the existence of the H-series, but apart from IBM leaks, Fertig sees unanswerable reasons for its necessity, among them the inadequacies of 370 architecture, its complexity from the user viewpoint, the threat from the plug-compatible manufacturers who, he says, now have 10% of the market for machines in the 158 and above class, deficiencies in 370 data security and its high manufacturing and maintenance costs.

Reviewing IBM's prospects, Fertig was doubtful that the company could maintain a 15% turnover and profit increase. "To do so would require DPD and GSD rentals to rise 8% a year, DPD and GSD sales to rise 20% a year — and that's unrealistic, office products to rise 25% a year — and that is possible, because Wang is growing at 80% a year, so IBM should be able to manage half of that in word processing. And it requires services to rise 30% a year. Last year it was 38%. But I expect the growth rate to fall to about 13% overall."

"IBM will spend \$1,700 million on research and development this year, which is more than the total of most of its competitors combined. But much of that is insurance, developing alternative products and products it may need but may not. If the 8100 does not succeed, then the 4300 or the System 38 will."

Fertig expects IBM to form a holding company with separate subsidiaries, not all wholly-owned, within the next 18 months.

He also thinks that IBM's scare-mongering about the threat from the Japanese is exaggerated.

"The Japanese threat is not serious if IBM is innovative — and despite its complaints, it helped the Japanese last year when it bought 30% of the production of Silicon Valley in things like 10K memory chips, causing a shortage and forcing other manufacturers to turn to the Japanese to fill the gap."

IBM will announce a facility enabling multiple operating systems to run under MVS by the end of the year and the skeletal operating, VM, can then be scrapped. There will be a common JCL for MVS and DOS/VSE and within five years DOS/VSE will be phased out.

These surprising predictions were made by John Curran, product marketing director of National Advanced Systems, in his paper on future directions in the plug compatible industry.

Curran also envisaged the need for third party software maintenance companies to help smaller suppliers of IBM compatible processors, but he dismissed suggestions that PCMs would be put out of business by IBM microcoding more of its systems software. He pointed out that the real effort and cost in microcode development was in identifying those

parts of software that were suitable for microcoding and that this task was borne only by IBM.

Commenting on the failure of the Amdahl and Struge Technology merger plans, Bob Fertig, of ACT, lined up three other possible suitors for Amdahl Control Data, the oil giant Exxon, and AT&T.

Fertig saw Amdahl implementing Control Data's other activities such as its IBM-compatible peripherals business. AT&T might be interested, he suggested, because it already accounted for up to 15% of installed Amdahl machines, while Exxon had the money.

However, Ulrich Weil, of security analysts Morgan Stanley, disagreed totally. He felt certain that Control Data had no wish to get back into large-scale systems while AT&T and Exxon would not want to get loaded with Amdahl's problems.

Preview of H-series

OUTLINING some of the advances he expected in the forthcoming H, or Adirondack, series, Bob Fertig said he expected it would follow System 38 in providing substantial improvements in functionality, overcoming at last the constraints of 380-370 architecture.

It would have a wider address space, probably 32 bits, giving direct addressing of up to four gigabytes, and would feature built-in data security, a key weakness in the 370 design.

It should provide multiple ways of viewing logical files, as with the relational database on the System 38, and would eliminate system generation requirements which waste resources and staff time, and also job control languages.

Other features that Fertig looked for included a high level instruction set, self-diagnosis, and improved reliability and maintainability.

As to the problem of IMS Fertig considered that it would continue because 2,500 of IBM's best customers are using it. But, as others have suggested, it would be extended and enhanced with relational capabilities.

The first machine in the series, he forecast, would appear early next year. Codenamed Iroquois II, it could appear as the 3036 and would be a 12 MIP machine made up of an 8 MIP master processor and 4 MIP slave processors.

The two processors, he said, would be combined through a System Control Unit, and part of MVS would go into an Execs Control Program, off-loading input-output into a separate processor.

"If you examine a 158 in a typical database communication application you find that in many cases 60% to 70% of available CPU cycles are used just to handle I/O. By offloading this on to a separate processor with virtual paging store you relieve the prime processors to do more useful work," commented Fertig.

He expected the H machines to offer 2.5 times as many MIPS per dollar as the 303X — not as good as the 4300 because at the top end, high-speed technology remains disproportionately more expensive in LSI.

Fertig looks for about 18 megabytes of main memory on the Iroquois II, priced at about \$25,000 per megabyte in the US. He believed that the single processor Iroquois I had been killed.

One purpose of the early evaluation exercises was to find out whether two Juniors, one adviser, and one experienced person could handle the machine.

"With VM/CMS we found that it was easy to work and the Juniors could handle it. DOS/VSE with CICS was much harder and required experts."

But it and the I/O/E should be much better. The new series should be extended upwards and will need fewer people to bring the system up and manage it.

"With VSI we found it necessary to bring it up under VM, which was the only way of the machine. But VSI is being stabilised rather than developed further. There will be no functional enhancements, but I expect support for new devices where these are essential."

"DOS/VSE is already visibly improved, and it looks like a solid system. If you run a batch shop VM and CMS are being developed further and are going to be an interactive system with some batch. If you want to run DOS/VSE and CICS under VM, you need a 4331-2 or a 4341."

Possible new suitors for Amdahl

IBM will announce a facility enabling multiple operating systems to run under MVS by the end of the year and the skeletal operating, VM, can then be scrapped. There will be a common JCL for MVS and DOS/VSE and within five years DOS/VSE will be phased out.

These surprising predictions were made by John Curran, product marketing director of National Advanced Systems, in his paper on future directions in the plug compatible industry.

Curran also envisaged the need for third party software maintenance companies to help smaller suppliers of IBM compatible processors, but he dismissed suggestions that PCMs would be put out of business by IBM microcoding more of its systems software. He pointed out that the real effort and cost in microcode development was in identifying those

parts of software that were suitable for microcoding and that this task was borne only by IBM.

Commenting on the failure of the Amdahl and Struge Technology merger plans, Bob Fertig, of ACT, lined up three other possible suitors for Amdahl Control Data, the oil giant Exxon, and AT&T.

Fertig saw Amdahl implementing Control Data's other activities such as its IBM-compatible peripherals business. AT&T might be interested, he suggested, because it already accounted for up to 15% of installed Amdahl machines, while Exxon had the money.

However, Ulrich Weil, of security analysts Morgan Stanley, disagreed totally. He felt certain that Control Data had no wish to get back into large-scale systems while AT&T and Exxon would not want to get loaded with Amdahl's problems.

An alternative to the industry standard LA36

Data Dynamics
Computer and Communications
303
Terminal



NOW AVAILABLE ON 4 TO 6 WEEKS DELIVERY

The Data Dynamics is a plug compatible alternative to the industry standard LA36. It features many improvements including a rugged metal case, illuminated platen, paper tape reader/punch and takes up less floor area. It is available with or without a paper tape punch and reader.

ddg Data Dynamics Group

HEAD OFFICE: Data House, Springfield Road, Hayes, Middlesex. Tel: 01-828 9781. Telex: 935449
MANCHESTER: 320 Mosley Road, Levenshulme, Manchester, M19 2LJ. Tel: 061-224 33067
GLASGOW: Enterprise House, 60/71 Queen Street, Glasgow, G2 7AT. Tel: 041-226 62612
ANSWERPHONE FOR AFTER HOURS SERVICE CALLS ARE 0747 3994, 091-224 3306, 031-226 6261

THE LEADING EXHIBITION OF COMPUTERS, PERIPHERALS AND SYSTEMS

COMPEC '80

in the Grand Hall at
OLYMPIA, LONDON
November 4, 5 & 6, 1980

Sponsored by "Computer Weekly," "Data Processing," "Practical Computing" and "Systems International"

The enormous attendance of over 35,000 visitors at last years event has established Compec as Britain's Biggest Computer Exhibition

Ensure your participation in the computer show of the year by posting the coupon below.

STAND RESERVATION FORM

To: The Exhibition Manager, Compec 80, 40 Bowling Green Lane, London EC1R 0NE

Please provisionally reserve for us stand space at Compec 80 and send the undersigned more details.

Name _____ Company _____

Tel No _____

July 17, 1980 1:30

If we couldn't beat IBM, we wouldn't be in business.

ITT Business Systems supply terminals, printers, communication controllers and associated communication equipment for IBM mainframes and IBM plug compatible mainframes.

But as IBM also supply their own equipment, you might wonder why anyone should buy ours.

The answer is simple. Ours are better. They have to be, or we wouldn't be in business.

Being better means we beat IBM on price. And in many instances we also beat them on technology. Invariably we offer a better solution at a reduced system cost.

Take, for example, SNA. If you've got pre-SNA equipment there is a fair chance you will have to change up to half your total terminals.

With ITT you change only one device - the terminal controller.

So the ITT system will give you greater flexibility and far less disruption when the time comes to change from the old system to the new.

ITT are, in fact, committed to follow the IBM development path for data communications equipment and to give better price/performance.

What it all adds up to is a better way to get the most from your computer. And if you clip the coupon, we'll be happy to send you details of what ITT Business Systems have to offer.

Ring 0273-507111 or write to Publicity Department, ITT Business Systems, Lion Buildings, Hollingbury, Brighton, BN1 8AN (Telex 87169) for information on:

☐ VDU's ☐ Data Printers ☐ Modems ☐ Programmable Communication Controllers ☐ Terminal Controllers ☐ Data entry ☐

Name _____
Title _____
Company _____
Address _____

ITT Business Systems

ADVANCED FILE DESIGN—Part 14

Problem of file security

by OWEN HANSON

and NORMAN REVELL

IN this part we shall look at some of the problems of file security that are unique to online and database systems. Security measures for individual files such as checkpoints, batch-control and so on were discussed and analysed in Basic File Design and most of these methods are just as relevant to online and database systems which make use of them.

Because of the very nature of online systems, however, some of the batch totalling methods which provide a very effective control of a batch of transactions as they pass through the steps of an application, cannot be used for online systems, or online database systems, where each transaction stands alone and is processed in its entirety.

It should also be noted that because the files of these systems will be available for much longer on average than those of a batch system which are just mounted when required, there is greater potential for error.

A type of problem which can sometimes happen is where an error occurs in entering a transaction for example, which is not detected at the time, and may only come to light weeks or even months later, making detection of the "bug" which caused it virtually impossible.

In such a case the organisation may have to live with this "known error" taking appropriate temporary measures to correct it until its true source can be detected. Database systems can pose their own special problems due to the more complex nature of the physical files where indices and pointers may be lost or corrupted. We shall now examine some common problems and their possible solutions.

The pipeline problem
If an online or database system fails for any reason such as a hardware or software error, then it is possible that several transactions may have been at various stages in updating the files. On restarting the system there is a risk that these transactions may be lost or even doubly applied.

Most online and database systems make use of a log or journal of incoming transactions as a means of recovery, since the files can be updated from a previous backup copy using this log. The log would normally be held as a serial file on tape or disc.

Even if these transactions were time-stamped on receipt it would not be possible to know which transactions had been successfully applied before the system failed, since it is possible that transactions of different priorities and different access requirements may not be processed in strict order and may overtake each other.

The only way to be absolutely certain would be to hold the time stamp of all recent updating transactions on the file itself, so that these can be compared with the log of incoming transactions, though this assumes that no two incoming transactions would have exactly identical date and time stamps. In this way it would be possible to ascertain which transactions had been successfully applied.

Various methods have been used to achieve this, such as the use of unique serial numbers for each incoming transaction, or the use of date and time stamps.

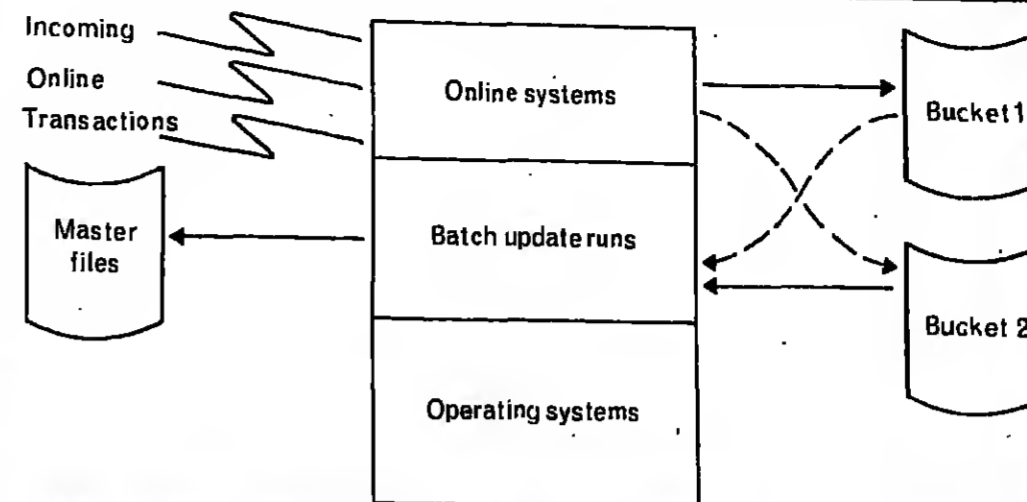


Diagram 1: The bucket system used in a multiprogramming environment.

rate log of successful file update transactions instead of entering the information on the master file record, though this latter approach will have an extra overhead since it necessitates an additional file reference.

The overhead of logging transactions can be reduced by blocking the log files, though to a large extent this may negate their purpose since several transaction log records may be lost in the output buffer in the course of a system failure.

We have emphasised the problem of losing update transactions as opposed to query-type transactions, since in the latter case no threat to file or database integrity is posed by system failure, and indeed in an online environment the terminal user, knowing the system has failed may repeat that transaction anyway. If this latter action is not acceptable then the transaction log can be used to re-submit queries which were lost when the system failed.

This assumes that query transactions are logged, which is not always the case, though it is good practice since a complete picture of the system is obtained when analysing the log which is useful for performance analysis and security control purposes.

The bucket method
In many systems, update transactions are not applied immediately but are instead stored in aerial files, often known as buckets, for later batch updating. This is normally done for reasons of security and performance (see Parts 12 and 13) though, of course, the major disadvantage of this approach is that query transactions will obtain an out-of-date answer.

A good example of this method is found in banking where any queries concerning account balance refer to that figure which applied at the close of business the previous day when all the update transactions were last consolidated on to the master file.

Though this approach is acceptable in some applications,

in others, such as airline reservations, it is clearly not and an immediate update is required. Between these extremes a situation is possible where two buckets are used and as one is being filled with incoming transactions the other is being processed by a batch file update program or suite of programs as shown in Diagram 1.

This approach combines the security and performance benefits of batch processing with the facility to have more up-to-date information on file than with the case where the file is only updated daily when online processing has ceased. When this approach is adopted the batch processing system must be designed to finish processing a bucket of transactions before the next bucket is full.

The diagram shows this system in a multiprogramming environment, though it could equally apply to a multiprocessor environment with shared peripherals, one processor handling the online system, the other the batch system.

The size of bucket chosen is a limiting factor in determining the frequency of the batch update runs, the larger the bucket size the less frequent these runs need be. If the update run involves sequential processing of whole files then it is more efficient to have fewer runs than if skip sequential or random processing is involved.

Control of access via software
In most online and database systems there will be control of access to files via security codes. This is often at two levels, first a sign-on code and secondly passwords for certain files or parts of the database. In an online environment it is possible to link the two together by having different classes of user, identified by sign-on code, who may have different levels of access.

For example, some users may only be allowed to query parts of the files or database while others are allowed to update or add new records. This can be

very useful for training purposes where a special trainee log code causes the system to simulate the appropriate responses while taking no action.

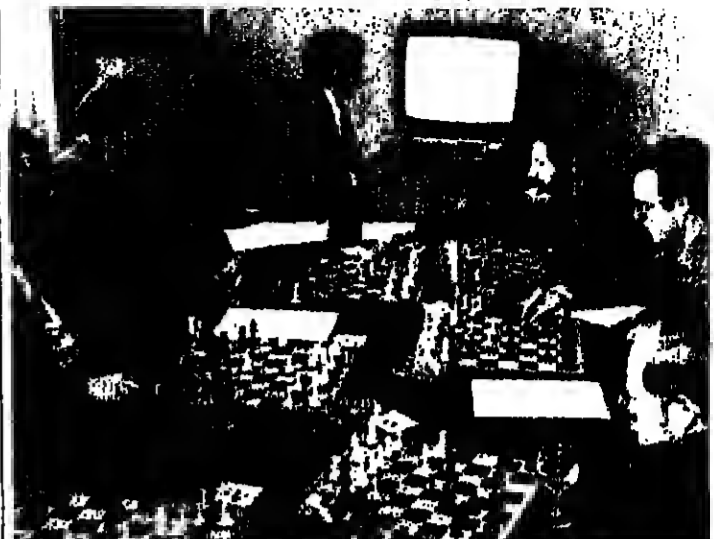
If a Codd-style DBMS is being used then there is scope for security control via the sub-schemas, each user program being given its own sub-set of the entire database which it is allowed to process.

Catastrophic failures
Catastrophic failures are those where it is impossible to continue processing by going back to a previous version of the files and applying the transactions again as described above. Any system from a single random or indexed file to a complex database may be rebuilt from a serial dump of the records, and indeed this reorganisation is often performed on a scheduled basis for reasons of performance and efficiency.

The main problem in being forced to reorganise because of failure is the time taken during which the system will not be available for use.

An interesting practical definition of what constitutes a very large database, VLDB, has been given as "a database of such a size that it cannot be reorganised in a single weekend". The practical implications of this definition should be immediately obvious to the reader. One approach is to break down such a database into more manageable segments.

A way of making catastrophic failures less likely is to have a regular procedure of examining and checking file contents either manually or by special housekeeping programs. One authority on the subject has advocated the design of a file-vel program for every master file when the file is first designed. This principle can be extended to apply to database systems and reduce the likelihood that a number of "left" errors can conspire over a period of time to produce catastrophic failures.



International Master David Levy demonstrates the Video Chess program he designed for the Texas Instruments TI 99/4 personal computer. It can play up to nine games at once, give action replays of single games, suggest moves to its human opponent and play a normal, aggressive or defensive game at three levels of competence. It can also be told to lose, to avoid discouraging weak players. The chess module costs £45, but the TI 99/4 costs around £1,000.

Occasion for Levy...

AN Othello program written by David Levy's London-based games software company Philidor Software came close to winning a tournament for human and computer Othello players in Evanston, Illinois. It was the only contestant to beat the world champion Irosho Inouy, but it was only brought to peak performance in time for its last game.

The next two years should see the last human victory over Othello playing computers, according to International Master Levy. Levy set up his company in March last year when he was asked to design a chess program for a Hong Kong games maker, Scisys-W. He has now delivered five programs, including gin rummy and a German card game called skat. More are under development.

Computer centres are sexist, says union

THE banking and finance industry discriminates against women by not encouraging them to gain the professional qualifications needed for promotion. This is the view of the Banking, Insurance and Finance Union in a pamphlet on equal opportunities for women, *Woman in Banking and Finance*.

Discrimination, says the publication, takes place not only in branches but also at computer centres where women are often to be found working the simpler keyboard equipment, leaving the more technical and advanced work to men.

BIFU, which has a high proportion of women members — the current figure is 48.5% — feels so strongly about the matter that it has formed an equal opportunities committee. In some cases, the paper goes on, "discrimination starts as soon as the female employee has joined the company. While the career-minded woman is told in his interview about opportunities for advancement and the importance of getting professional qualifications, the new female employee is often not given this valuable information."

Prams go online

PRAM — manufacturers, Lawrence Wilson and Son of Leeds, have ordered an NCR V-8455M system to handle online order processing, ledger and payroll applications. It will replace an NCR Century 75.

The Ultimate mini-computer. It speaks the Queen's English.

- Available in Britain from Universal Computers Limited.
- It's languages are Basic and Pascal which uses simple English words and phrases.
- No need for trained data processing staff.
- The Ultimate uses an operating system normally only found on far larger computer systems.

- The Ultimate computers are built and supported by Honeywell, a respected world leader in high technology.
- You can depend on the Ultimate computers for high performance. And speak to them in Queen's English.

- Use the Universal Library of application packages. Commodities, Production Control, General Accounting, Banking, Investment, Printing, Insurance, Advertising.
- Stockholding and many more.



UNIVERSAL COMPUTERS LIMITED

23 Paradise Street, London SE10 2JH Tel: 01-731-7355

Contact
Xenia White

SK

DEC SYSTEMS FAST!

- PDP 11 BASED COMPUTER SYSTEMS
- FULL RANGE OF SOFTWARE
- PER CALL OR CONTRACT MAINTENANCE AVAILABLE
- WIDE RANGE OF DEC COMPATIBLES

YORK HOUSE, STEVENAGE ROAD
HITCHIN, HERTFORDSHIRE, SG4 9DY

telephone 0462-31116 telex 825647 Sk Sys

digital systems and compatibles in stock

BUYING
SELLING
LEASING?

COMPUTER
RESALE BROKERS

CRB House 33 Church Street
Gillingham, Kent ME14 1QD
Telephone (0258) 55431
Telex 868048

CRB
AN AL COMPANY

COMPLETE GRAPHICS MINICOMPUTER SYSTEM

DEC PDP 11/34A with 32KW MOS Memory, 2 x RK05 cartridge disks, DEC 17" refresh graphics VDU plus light pen, 30cps DECwriter, 38" CIL Economist plotter and interface.

£20,000 + VAT incl. For immediate delivery
Ring J. Hornham, Berkhamsted (044 27) 6481

IBM SYSTEMS 34 FOR SALE

Now available August/September
C.P.U. 128K, 64 Megabytes
6 x V.D.U. 1 x 600 lpm Printer
1 x 120 cps serial Printer

For further details contact
R. Pedrosa/D. Ashley
01-803 7400 or
01-581 1481

PDP 11/04 /34 /60 /70
COMPUTER SYSTEMS
COMPETITIVE
DELIVERY &
PRICES

EAST DEC!

FROM
Systek

HR House, High Road,
North Finchley, London N12 0AZ
Tel: 01-349 2911 Telex: 28227

IBM

129 BUFFERED PUNCH/VERIFIERS
029 PRINTING PUNCHES (VARIOUS CODES)
028 PRINTING PUNCHES

028 PRINTING PUNCHES

DEC TERMINALS

LA34 DECWRITER IV K.S.R.
LA38 DECWRITER II K.S.R.

FOR BROCHURE & FULL PRICE LIST INCLUDING RENTAL DISCOUNTS
Tel. 0268-710282

C.D.L. COMMERCIAL DATA LTD.
Downham Road, Remden Heath, Gillingham, Kent

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

0268-710282

SURPLUS STOCK

DEC H960 CB new £890 each
TE18-EJ new £8,000 each
LA36-CJ new £1,300 each
RL02K-DC new £115 each
VT100-AB new £1,180 each
TS11-B8 Corp Ceb new £9,063

Ring 0462 31281

Nelson Computer Services Ltd.
ST. JOHN'S COURT, BACUP ROAD, RAWTENTHALL, LANC'S BB11 1TA

NEW, REBUILT AND SECOND USER EQUIPMENT

IBM D28 059-129 Card Punched
IBM 3742 Floppy Disk Key Stations
UNIVAC 1701-1710 V.P.V.P.
DECISION DATA 8010-8010 Card P.V.
BURROUGHS PC 820-820 Card P.V.
KODAK Paper Tape Equipment
Telegraph A81 33
Hercules Punched
Line Printers
Serial Printers

Business Despatchers
Business Despatchers
Business Despatchers
Business Despatchers
Business Despatchers
Business Despatchers
Business Despatchers
Business Despatchers
Business Despatchers
Business Despatchers

PHONE FOR BROCHURE AND UP-TO-DATE STOCK LIST 07062-29125

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

BUY - SELL - LEASE - RENT - MAINTAIN

Qume
CIFER
digital
OKI
Rohan Computing

Computers Bought and Sold

EOB LIMITED

Tel: 0783-44777

Telex: 537763

0783-44777

0783-44777

0783-44777

0783-44777

0783-44777

0783-44777

0783-44777

0783-44777

0783-44777

0783-44777

0783-44777

0783-44777

0783-44777

0783-44777

0783-44777

0783-44777

0783-44777

0783-44777

0783-44777

0783-44777

0783-44777

0783-44777

0783-44777

0783-44777

0783-44777

0783-44777

0783-44777

0783-44777

0783-44777

0783-44777

0783-44777

0783-44777

market place



HEXAGON

HEXAGON HOUSE 145 WARDOUR STREET LONDON W1V 3TB

For Sale!

A limited number of ex demonstration
Forms Burstors and Decollators
at substantially reduced prices.
For more information contact **BPC Business**
Equipment Products on (0632) 771061/2.

THE LEADING
EXHIBITION OF
COMPUTERS,
PERIPHERALS
AND SYSTEMS
COMPEC
'80

in the Grand Hall at
OLYMPIA,
LONDON
November
4, 5 & 6, 1980

Sponsored by "Computer Weekly", "Data Processing", "Practical Computing", and "Systems International".
The enormous attendance of over 35,000 visitors at last year's event has established Compec as Britain's Biggest Computer Exhibition.
Ensure your participation in the computer show of the year by posting the coupon below.

STAND RESERVATION FORM
The London Managers, 145 Wardour Street, London W1V 3TB, are pleased to reserve for you stand space at Compec '80 and will be pleased to discuss your requirements.

WEBSTER D/P SERVICES LTD.

NEW/USED DP EQUIPMENT
BUY OR SELL THROUGH **W.D.P.**

NEW DE LUXE 80 COLUMN
HAND PUNCHES (EX-STOCK) **W.D.P.**

01-464 9811

TELEX 888888

WEBSTER D/P SERVICES LTD.
15 WINDMERE ROAD, DROMLEY
KENT BN1 3AA

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

01-464 9811

Appointments

THE NEWSPAPER COMPUTER PEOPLE RELY ON

Appointments

COMPUTER WEEKLY

Classified Department, Dorset House,
Stamford St, London SE1 9LU

Box Numbers: Should be addressed to
the box number in the advertisement c/o
Computer Weekly at the above address.

Classified Rates: C15 per sq cm.
18 x 3 cols = C15, 36 x 3 cols = C1,375.
Half Page (18 x 7 cols) = C1,430.
36 x 4 cols = C1,675.
Full Page (36 x 7 cols) = C2,650.

Copy Deadline: 3.30 pm Monday prior
Thursday publication date. Complete
advertisements up to 11 am Tuesday. Advanced
space reservation is advisable.

LONDON
Assistant Classified Manager
Chris Prior 01-261 8978
Ken Wallford 01-261 8977
Ien Faux 01-261 8978
Neil McDonnell 01-261 8978
Denise Smith 01-261 8978
Julie Hanneford 01-261 8978
Kevin McDevan 01-261 8978

MANCHESTER/GLASGOW
Owen Kelly 061-872 8881
Geoff Aiken 061-872 8881
BIRMINGHAM/BRISTOL
Vic Sharret 021-356 4818

Knight

Software Division

IBM 3031 + SO/VM + APL HOME COUNTIES
Analyst Programmer required for commercial application, early start.

IBM 8100 DMS C. LONDON
Experienced Analyst Programmer for 6-month contract, on new development projects, commencing August onwards.

IBM DOS/VS COBOL + CICS Programming HOLLAND
Analyst and Programmers to work on long-term development contracts.

HONEYWELL L66 COBOL + TDS + IOS MIDDLESEX
Analyst and Programmers to work on long-term development contracts.

ICL 1900 + 2900 + OME + COBOL HOME COUNTIES
6 month Analyst Programmer contract. Conversion work. Start NEXT MONTH.

HONEYWELL L66 + COBOL + GCOS + SYSTEM IV HOLLAND
Specialist Programming required urgently for long-term 'Support' role.

IBM 270 + OS + MARK IV LONDON
Senior Programmer required for Central London location. Minimum 6 months.

HONEYWELL 66 + GCOS + IDS + TDS HOME COUNTIES
Analyst Programmer required for up to 2 years' contract.

ICL 2904 NORTH-EAST ENGLAND
Under EXEC using COBOL with MTS and online facility. Systems consultants for 6-12 months' contract.

Operators Dial me information!

KNIGHT OPERATIONS houses a full recruitment and contract service to the computer industry. We have been around for a few years now and if you have too, and you're venturing contract or permanent employment, give us your information! Call 01-491 4706 or write requesting an application form. (Vacancies for trainee operators and data control staff too).

THIS WEEK'S LATEST PERMANENT VACANCIES:

IBM OS VS OPERATOR LONDON, E.4
(Training given on 4341). 2 years' experience on DOS please!
Salary: £6,200

IBM OS VS1 OPERATORS KENT
18 months' experience. Junior and senior vacancies.
Salary: Depending on level.

PDP11 OR HEWLETT PACKARD OPS CHESHIRE
6 months' experience only required. Great company, benefits.
Salary: £4,400 + bonus.

JOB CONTROLLER (OS JCL) HARROW, MIDDX.
Fluent OS JCL - Days only.
Salary: £4,000 +

Always contact Knight's Sue Smyth, Rachel Martin, Joanne McKeggie and Kevin de Lys O'Connor, are always happy to advise you on contracts, permanent and trainee vacancies.



Knight Computer Services Ltd.

01-491 4706
OR WHEN BUSY 01-439 3411

MYRIAD

COMMUNICATIONS SYSTEMS INTERNATIONAL SUPPORT

Base: BERKSHIRE

Start: £7,500-£10,000

We are seeking additional SYSTEM PROGRAMMERS to join our client's International System Support group to provide specialist support, advice and consultancy both within the Company and to users throughout Europe.

You should be able to offer one (or more) of the following:

- ★ PDP 11, MACRO-11 programming
- ★ RSX11-M experience
- ★ Control software experience
- ★ Knowledge of data communications

You will be involved in the following:

- ★ Advanced communications systems
- ★ Mini and micro based products
- ★ Sophisticated networks
- ★ Travel throughout Europe

As a member of a very successful group of companies our client is the undisputed market leader in its field. Outstanding field support has played a large part in the company's success and it is due to the forthcoming announcement of major new products that these vacancies have arisen. These positions are therefore new and exciting opportunities within an organisation able to offer excellent future career progression. To apply, telephone at any time, write or simply clip and return the coupon.

Ref. SW3/1707/CW

SMALL SYSTEMS HARDWARE CONSULTANCY

BERKSHIRE

Start up to £11,500

We are seeking an additional Senior System Designer to join a small multi-disciplined team providing consultancy services to project groups engaged on small systems development. The person appointed will be concerned with the definition of development quality objectives, will monitor the achievement of these objectives and provide design input to ensure that development quality levels remain high.

You are likely to have an interest in the following:

- ★ MINI-COMPUTER DEVELOPMENT
- ★ HARDWARE ARCHITECTURE
- ★ DISTRIBUTED INTELLIGENCE
- ★ MICROPROCESSOR TECHNOLOGY
- ★ QUALITY ASSURANCE

Your background should include a selection of experience from:

- ★ DIGITAL ELECTRONICS
- ★ COMPUTER SYSTEMS
- ★ SYSTEM SOFTWARE
- ★ LSI USAGE
- ★ PROJECT MANAGEMENT

In the short-term this is an excellent opportunity to play a major role in the development of a new range of small systems and in the long-term the company can offer an excellent career path. The immediate rewards are high and include an excellent commencing salary (a review is imminent), comprehensive relocation package and involvement at the forefront of computer technology.

Ref. SW4/1707/CW

MYRIAD APPOINTMENTS LIMITED

30 Fleet Street London EC4Y 1AA Telephone 01-353 0981 24 hours

SEND TO: MYRIAD APPOINTMENTS LIMITED, 30 FLEET STREET, LONDON EC4Y 1AA

I am interested in Ref. _____

Name _____ Address _____ Tel Day _____ Evening _____

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611

General Manager - Europe

Computer Graphics

We have been retained to identify and select a General Manager, Europe, for the Graphics Division of our client, a multi-million dollar American conglomerate involved in the manufacture and development of sophisticated computer products.

The responsibilities will include the consolidation and further enhancement of their business position in Europe including the UK. Well established in the domestic market and in Europe it will be the task of the successful applicant to control direct sales in the UK and to develop the dealer network on the continent and to extend this area of operation into Scandinavia.

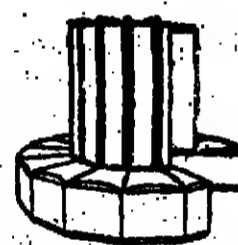
Shortly to be based in new offices in the West of London, the position carries a remuneration package that will reflect the importance of this position, and candidates will currently be earning in the region of £14K. Also offered are an executive car, PPP, Pension, etc. There will be extensive travel in Europe and approximately 4 trips to the USA a year.

Contact Tony McGrath now on 01-637 9611

Suite 201/6, Albany House, 324 Regent Street, London W1R 5AA. 01-637 9611

MANAGEMENT & EXECUTIVE SELECTION

(1980)



CRAY
RESEARCH (UK) LTD

require

COMPUTER ENGINEERS

CRAY RESEARCH is a young and successful organisation manufacturing and supporting the world's most powerful computer processors and, due to continued growth, now has vacancies for both Junior and Senior Engineers in the Wokingham, Newbury and Manchester areas.

These posts entail site maintenance down to component level of CRAY's mainframe processors and associated peripherals. Shift work and overtime may be necessary.

Junior applicants should be comfortable with Boolean and digital techniques, whilst senior applicants must have two years' mainframe experience. All applicants should be educated to HNC standard or equivalent. Product training in the UK and US will be given to successful applicants together with the opportunity to travel within Europe when qualified.

These posts carry good salaries together with company car, paid overtime and an excellent overall benefits package.

If you are interested in joining a rapidly growing world leader in technical computing, please telephone Stuart Dreyton, Engineering Manager, for an application form.

CRAY RESEARCH (UK) LTD.
0734 791100

NATIONAL INSTITUTE
FOR RESEARCH IN
DAIRYING

COMPUTER RECORDS OFFICER

A vacancy exists in the Dairy Husbandry department for a person with experience in computer programming to take over the duties of the Records Officer. The Records Officer will collect, check and process the data (milk yield, health, reproduction, liveweight, stock numbers) derived from the Institute dairy units. The person appointed should have experience in computer programming (Fortran). He/she will maintain existing recording schemes and develop further programs to meet various research and farm management requirements. A knowledge of agriculture would be an advantage but is not essential. The post provides excellent experience in the developing field of the use of computers in agriculture.

Qualifications: Degree in scientific subject or HNC with relevant experience.

Appointment will be as Scientific Officer (£5,581-£6,498) or Higher Scientific Officer (£6,097-£8,737) according to qualifications and experience. At least five years' appropriate post-qualifying experience is required for appointment as Higher Scientific Officer. Non-graduate salary arrangements.

Applicants should obtain application forms from the Institute, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

Development Programmers

SE & NE Berks/W. Herts/NE S Beds.

A number of selected clients, with small to medium, expanding development groups, have vacancies for well qualified systems programmers. If you have one or more years experience with mini or micro software, these are plum jobs for you to consider. Salaries are upwards from £6,000.

New Development Centre Technical Publications Manager

S. Beds. c£10,000

Our client requires an experienced Technical Author with a software and hardware background in mini computers to manage an existing department. You will be responsible for twenty people including a Word Processing unit. Applicants must have proven management experience.

Senior Technical Author H/W

To work in the above centre on complete mini computer system and use documentation. Previous experience in ATE or diagnostic documentation would be useful.

Applications Support Specialist

NE Home Counties & London. £Negotiable inc. car

Our client, a large multi-national company, is seeking a person knowledgeable in the features and requirements of standard financial computer applications. You will operate from the London office in a pre-and post-sales role assisting with client problems. Your strength will be in Applications rather than in Computing.

Designers Hardware & Software

London & W. Country. £6K-£11K

Join a highly qualified existing team working on ambitious project developments in electronic office systems. These are permanent positions in a prestigious company. Projects cover: Networking and control graphics - intelligent work stations interface design, etc.

Apply in confidence to Terry Harvey by sending personal and career details, or contact him for an application form, evenings 6pm-8pm (02406) 4705 or daytime as below.

HR Harvey Recruitment
Executive and Computing Personnel
500 Chesham House, 150 Regent Street
London W1R 5FA. Tel: 01-734 5251

BE PART OF THE BANKING SYSTEM OF THE 80's

One of the UK's BIG CHALLENGING BANKS

Latest Techniques

— Work on the latest Hardware and Software on a Large System, involving BATCH, T.P. AND THE LATEST DATA CAPTURE METHODS.

Training

— A wide range of Technical and Management training available.

Complete Job Interest

— Challenge of Pioneering Stages of Large Brand New Development.

True Career Structure

— Many Promotion channels. Prospects within Technical Field, Technical Management.

Salary

Junior Systems Analysts and Programmers. Negotiable up to £7,000 on a scale expected to top £8,000 on review (1 July, 1980).
Systems Analysts and Senior Programmers. Negotiable up to £8,600 on a scale expected to top £10,000 on review (1 July, 1980).

Experience Required

- Minimum 18 months' experience in a Commercial Data Processing environment. Working on Systems Development as a Programmer, Programmer/Analyst or Systems Analyst. A Banking or Financial Systems background is considered to be advantageous.
- Programming experience with any of the following would be advantageous:
ICL 2960, 2972 — VME/B & T.P.M.S. 200 — COBOL & SCL
ICL System 4/70 — J. MULTIJOB — COBOL & USERCODE
PDP. 11/70 — RSX 11M — MACRO II —
FERRANTI ARGUS 700 — CORAL
- Systems Analysts experience with any of the following would be advantageous:
ICL 2900 — VME/B, TPMS 200, DDS 400.
On-Line Systems Design including
Interactive Dialogue Design,
Disc File Organisation and Design,
Data Entry and Enquiry Systems,
Data Communications
and Network Design,
Large System Sizing

Working environment is modern, comfortable and efficient. Most work to be carried out in Bootle with some opportunities for travel. Relocation will be paid.

TASK FORCE LTD
44 KINGSWAY, STOKE-ON-TRENT
STAFFORDSHIRE ST4 1JH
TEL: (0782) 410217

Talk to DAVE, PAUL or DEREK or send in the coupon

ST-1 on 1749
SEND TO A.M. TASK-FORCE
44 KINGSWAY, STOKE-ON-TRENT, STAFFS

Senior Sales Executives

With ambitions to move up-market

£18k On-Target Earnings

Basic Salary £8.5k

Negotiable Guarantee
COMPANY CAR

TERRITORIES

THE CITY
Finance Banking
THE SOUTH EAST
Technical
SOUTHERN ENGLAND
Real-Time Simulation



Specialist Computer Recruitment Ltd

London 01-835 0671 3 Mandaville Place, Wigmore Street, London W1M 6LB
Birmingham 021-236 3781 35-37 Great Charles Street, Queensway, Birmingham B3 3JY
Manchester 061-833 0427 Blackfriars House, The Personage, Manchester M3 2JA
Brussels 010 322-840 7151/71 Avenue Louise 327, Boite 4, 1050 Bruxelles

Our Client's origins go back to the 1930's in America. They now turnover around a Billion Dollars worldwide and employ over 1,000 people in the United Kingdom alone. Together with a strong European base they have both the financial muscle and dynamism that makes them a force to be respected. Their expertise encompasses the scientific, technical, commercial and financial market sectors.

The products; real-time "Super-Minis" with the industry reputation for the most reliable computer systems available. Reliability is designed into the hardware and software and integrated into all of their manufacturing and testing procedures. System integrity is of paramount importance in real-time systems and as such their systems adopt a "fail-safe" mode minimising down time.

They wish to identify professional persons who will have a proven record of successfully selling computer systems in the relevant market sector. The chosen candidates will become an integral part of a dedicated team of people committed to marketing and supporting the Company's 'state of the art' products. These positions offer individuals a real chance to contribute significantly to the direction of the marketing effort. Career opportunities are good and the earnings opportunity limitless in this expanding company.

For an immediate and confidential interview where you will be supplied full company information contact,
Simon Lever on 01-935 0671 (24 hour answering service)
or 021-420 1574 (evenings and weekends).

Candidates are invited to submit curriculum vitae if preferred where confidentiality is guaranteed.

SCRL

(081)

ANALYST/PROGRAMMER Minicomputer Systems

The Medical Research Council Cyclotron Unit has two Hewlett-Packard 1800 computer systems providing on-line and off-line computing facilities for a small number of research laboratories.

Applications are invited for the above post from persons with a degree or HNC and experience in scientific computing environment. Knowledge of Fortran and an assembler language is essential. Experience in H-P systems is an advantage but training will be provided.

The successful candidate will contribute to the further development of a data acquisition and control system for the cyclotron at all stages from programme design to commissioning and will also undertake advisory and programming work of a more general scientific nature using interactive development facilities.

Starting salary in the range £8021 (at age 21) to £8487 plus special allowance for experience, rising to a maximum of £7877.

Apply, giving full details, to Miss Alison Price, M.R.C. Cyclotron Unit, Harwell Health Physics, Oxon OX11 0QX, London W12 0HS (Tel: 01-743 4584, ext. 103).

(1988)

CONTRACT VACANCIES

SYSTEMS ENGINEERS

ICL G. LONDON £8.40 per hr. + O.T.

Programmers

RPG2/ SURREY/W. £8.40 per hr. + O.T.
ATE COUNTRY

Contact:

DURBAN ENGINEERS
01-330 2233/01-337 0044 days
01-641 2247/0483 (STD) 234474 evenings

THE UNIVERSITY OF SHEFFIELD DEPARTMENT OF ARCHITECTURE

Applicants are invited for the post of Research Assistant in the above Department to work with an experienced architectural design team. The successful candidate will be responsible for the design and development of computer-aided architectural design systems for the school and medium-sized design offices. Applicants may be required to undertake research in the field of computer-aided architectural design. The post is a full-time position, commencing in September 1980. Salary is £8,000 per annum (plus pension). The post is open to graduates in architecture or a related discipline. Applications should be sent to the Department of Architecture, The University of Sheffield, Sheffield S10 2TN. Tel: 0114 275 2111. Fax: 0114 275 2112.

RESEARCH ASSISTANT

Applicants are invited for the post of Research Assistant in the above Department to work with an experienced architectural design team. The successful candidate will be responsible for the design and development of computer-aided architectural design systems for the school and medium-sized design offices. Applicants may be required to undertake research in the field of computer-aided architectural design. The post is a full-time position, commencing in September 1980. Salary is £8,000 per annum (plus pension). The post is open to graduates in architecture or a related discipline. Applications should be sent to the Department of Architecture, The University of Sheffield, Sheffield S10 2TN. Tel: 0114 275 2111. Fax: 0114 275 2112.

COMPUTECH 01-794 0201

IBM
PL1 IMS DB/DC ADF Programmers
PL1 Programmers
DOS VS CICS Systems Programmers

MAINFRAMES
Honeywell IDS & TDS Analyst
Programmers
MVS VTAM Systems Programmers

MINI/MICRO
PDP 11 BASIC + 2 RMS 11 Programmers
RDP 11 RSX11M MACRO 11 Programmers
DG AOS INFOS COBOL/IDEA
Programmers
GENRAD 2270/2290 Programmers

ANALYSTS
Systems Analysts with PDP experience
QPAC Analysts

OTHERS
RPL Analysts Programmers
APL Programmers

Contract

Work in the Midlands and
Birmingham (021) 543 8501
- in South Wales and Avon
ring Bristol (0272) 292966
or mail the coupon

Name _____
Address _____

(Ref Day) _____ (Ref Week) _____

Mail (no stamp) to FREEPOST Computer People
Midlands, Alpha Tower, Birmingham B1 1BP
Computer People Midlands



Wirral/Merseyside
Analyst/Programmers Up to £9.5k

Unilever Computer Services Limited

An exciting opportunity for Senior Programmers wishing to gain Analysis experience, to join a new installation at Bromborough, Wirral, Merseyside.

UCSL is the Computer Bureau set up by Unilever Limited to provide computer services for Unilever group companies and external clients. The Merseyside Data Centre is installing an ICL AS5 (plug compatible 370/158) planned to run under VM/CMS using Cobol, PL1 with VSAM, TOTAL and ENVIRON.

Systems and Programming Development Team

Ideal applicants should have a minimum of 3 years' programming experience with IBM Cobol/PL1, but training will be given to people with other hardware disciplines. Candidates must be able to present themselves well orally and in writing and have had some experience of Analysis work. It is intended that the posts offer development into commercial systems and ultimately into the role of Pre-sales Support for the right people.

Production Support Team

Candidates should have 3 years' programming background preferably with IBM Cobol/PL1 and will primarily be involved in the support of on-going systems. Experience of Analysis work in Accounting, Ledgers, Order-Entry and Stock Control is preferred.

For further information, please contact
Alan Morton on 061-491 1666.

Computer People North

Sovereign House 51A St Paul's Street
Stockport Road, Cheshire SK8 2EA
Leeds LS1 2TE
061-491 1666 0532-34941

Computing Services Association Recruiting for clients

VUgroup

A very special Special Accounts Sales Manager

N. England-based in Manchester Earnings Circa £20K plus car...

Our clients, world leaders in the manufacture of advanced computer systems, are looking for someone very special!

Responsible for managing the total northern sales and support operation for a portfolio of existing special accounts often at board room level.

A proven track record in computer sales is essential, as is maturity and ability to relate to all levels of user people from boardroom to shopfloor.

The position carries a basic salary of up to £12K p.a. which with commission should grow to £20K p.a. within the first 12 months. A car is also provided as is a company pension scheme, expense account etc.

with the potential of assuming total U.K. responsibility within 18 months

A feature of our client's company is its planned career development programme for all its employees. Due to the scheduled promotion of the UK Special Accounts Sales Manager the person appointed should be capable of assuming this role within 18 months.

Please telephone to arrange a confidential and informal discussion quoting reference JG 287



**INSIGHT MARKETING AND
PERSONNEL CONSULTANTS LTD**
Bain House, Charlotte Street, Manchester 1
Telephone 061-236 7028

Sheff no 1-70

IBM TELEPROCESSING CO-ORDINATOR City £6,500 +

As a Senior Operator from a DOS/VS background with strong T.P. skills you could be ready for this challenging move into our client's hardware control area where you work an extended day shift.
Your main responsibility will be the solving of all communication diagnostics involving considerable liaison with local and remote users.
It is imperative you are of smart appearance and can work on your own initiative.
An immediate mortgage subsidy is available.
KS11470 CW17-7-80

IBM 4341 DOS VSE POWER VS Essex Borders £5,200 +

At last — no more commuting! Local company can offer you all the advantages you would expect from a job in London.
An operator is required with around 18 months' experience of DOS POWER VS who likes to work unsupervised. Sophisticated training facilities are given. Bonuses, cheap car insurance and a sociable sports club are just a few of the many benefits that are given.
Call Sue Foulser on 01-240 1466 for further details.
SF11481 CW17-7-80.

ICL OPERATOR City, E.C.2 c.£4,800

We're not looking for a budding DPMM. Just someone, with ICL medium mainframe experience who would like to have the opportunity of learning all the many aspects of Data Processing.
You can expect excellent working conditions, those of which include a well-designed machine room, useful glass partitions, plenty of daylight and plenty of room.
Call Sue Foulser on 01-240 1466.
SF10723 CW17-7-80

DOS OPERATOR Surrey £5,200

A large food manufacturing company in Surrey are looking to recruit an operator with 12 months + experience DOS/POWER/VS. 4331 mainframe currently running under a 2-shift system.
Excellent sports facilities — swimming pool, tennis courts — subsidised bar and restaurant. Bonus scheme.
Tel. Sally Ann Bradley on 01-240 2441.

IBM SENIOR OPERATOR / SHIFT LEADER Reading Days only. c.£6,000

This international company can offer a Senior Operator/Shift Leader with potential, the opportunity of a supervisory position within the near future.
As a new installation they will be looking for technical IBM DOS/VS or VSE experience and the ability to evaluate and maintain the capabilities of their IBM 4331.
Responsibilities will expand to include technical support, liaison with remote sites and the recruitment of operators. Management training facilities will be provided to those operators who show potential for promotion.
Please telephone Penny Stock on 01-240 1466 for further details.
SF11481 CW17-7-80

Computer People

VII House 66-69 St Martin's Lane
WC2N 1AF

Recruiting for Clients VILGUP

Your imagination is your greatest asset!

salaries ranging up to £15,000

The expansion of the New Products/Projects Department at Plessey Telecommunications Limited, Liverpool, has created the need to appoint additional Engineers at various levels up to Project Leader. Plessey is one of the world's foremost telecommunications companies with a proven record of technical achievement and product design.

We need people with experience and background qualifications to design and develop telecommunication products using advanced digital, electronic circuit and computer/software techniques. You should have one or more of the following disciplines:

Electronic Systems Design
Electronic Circuitry Design
Computer Applications Design
Software Design

Candidates should have 5 years' experience or more, and a relevant degree. Age does not matter; ability and application are the factors that count.

We offer excellent career development prospects and the usual large company benefits, including generous relocation expenses.

Complete the coupon or ring 051-228 4830 Ext. 154.

To: Stephen Radford, Employment Officer, Plessey Telecommunications Limited,
Edge Lane, Liverpool L7 9NW.

Please send me, in confidence, an application form and information package.

Name _____ Age _____
Address _____
Tel _____
Qualifications _____

PLESSEY
telecommunications

THAMES VALLEY

ANALYST PROGRAMMER
CONSULTANT £8,400
£10,500

Successful since the 50s — Systems and Turbomechanics company handling a variety of projects to broaden your experience in hardware, software and especially applications.
If you have two to three years' experience you will progress rapidly with the company.

Benefits include: Bonus, pension, company car, private medical, etc.
Work pleasant, congenial, secure.

Write now for details, consultancy ref. 01-228 4830

an executive (Kingston) to

**BASIC + RSTS
PROGRAMMER
NEW YORK**

1 YEAR MINIMUM
TEL 01-606 8900 (24-hour service)

SOUTH DERBYSHIRE DISTRICT COUNCIL

**SENIOR
PROGRAMMER/
SYSTEMS ANALYST**
£5,973-£7,077 p.a.

PROGRAMMER
£4,681-£5,784 p.a.

Applications are invited for the above posts for the post of Senior Programmer/Systems Analyst (who deputises for a Manager in his absence) the successful applicant will need a number of years' programming experience in COBOL and a good grounding in systems development. Applicants for the post of Programmer must have a minimum of two years' experience in COBOL.

The Council has a Honeywell 62/35 installation with 44K bytes of memory, three 80 MB disks and a 800 L.p.m. printer. Input is currently by card but direct data entry is envisaged. Also linked to the mainframe, giving on-line cash recording, is an Inform 20/20 system.

The salary paid will be negotiable within the ranges shown above. In addition, relocation expenses, if applicable, will be paid in accordance with the Council's scheme and housing may be provided.

Further details and an application form may be obtained from the Treasurer, Civic Offices, Civic Way, Swadlow Park, Derbyshire DE11 0AH, or by telephoning: Swadlow Park, Derbyshire DE11 0AH. Please specify which post you are applying for.

Closing date for receipt of applications is the 30.7.80.

On the face of it, the contents of the average British shopping basket and the resources of one of the largest British commercial DP operations would appear to have little in common.

But appearances have been known to be deceptive.

That label on the pack of Sainsbury's bacon is a case in point.

You'll notice it features a bar code. When the item of shopping in question passes over a low powered laser scanner, the price and product description are automatically displayed and printed on the housewife's receipt.

It's more than just a neat technology gimmick.

In fact, laser scanning is a near symbol of Sainsbury's total commitment to the newest DP technologies, the latest systems concepts.

Because Sainsbury's recognise full well that, without computers, there probably wouldn't be so much of anything to bring home.

Which explains why we've become one of ICL's largest customers.

Why we're currently investing £ millions not just on new hardware but on the widest range of new systems projects.

For these reasons, working with Sainsbury's is a particularly attractive proposition for any man or woman whose sights aren't restricted to just an average DP career.

The kind of project we've described, and the very unusual DP environment we've talked about, all help to create a picture of what Sainsbury's could do for your DP career.

And if that picture seems as attractive to you

as it does to us, you might like to talk about the proposition further.

Especially if your experience makes you a contender for any of these new appointments.

Systems & Programming Team Leaders	c. £10,500
Project Leaders	c. £9,000
Senior Systems Analysts	c. £9,000
Operating Systems Administrator	c. £9,000
Technical Analysts	c. £9,000
Senior Programmers	c. £7,500
Programmers	c. £7,000

Phone Philip Johnson on 01-921 6576 and he'll put you through to someone in your own specialism.

Alternatively, write to him at J Sainsbury Limited, Stamford House, Stamford Street, London SE1 9LL.



Bringing home the bacon.

01-228 4830

Birmingham Area Distributed Processing Systems Development

Here is your opportunity to join a multi-million pound Organisation, who are in the process of building up a young, enthusiastic team to develop a major distributed processing system. The project will involve UNIVAC 1100 mainframes, V77 mini-computers and INTEL 8080 based equipment, with COBOL as the main programming language.

These sophisticated systems are to provide a cost effective solution to some of the problems of distribution management of the 80's and they will provide ORDER PROCESSING AND STOCK CONTROL facilities using DATA BASE, DATA COMMUNICATIONS, REAL-TIME and DISTRIBUTED PROCESSING TECHNIQUES with MULTIPLE COMMUNICATIONS NETWORKS.

We are now seeking applications for the following key appointments:-

SENIOR ANALYST PROGRAMMER

Minimum £8,000 plus bonus.

You should have gained at least 6 years computing experience and have a solid background of systems design, scheduling, systems implementation and user training, in addition to some experience of project control/supervision.

ANALYST PROGRAMMER

Minimum £7,300 plus bonus.

For this position, we are seeking an experienced programmer who has gained considerable exposure to systems design, specification, implementation and who is capable of identifying training requirements for subordinate staff.

PROGRAMMERS — STARTING SALARIES IN THE RANGE OF £5,700 - £7,000 PLUS BONUS

An opportunity exists for a programmer with experience or a real interest in INTEL 8080 micro processors, PL/M or MAC 80. There are other vacancies for programmers with varying levels of experience to work mainly on mini-computer systems.

Terms and conditions of Employment are excellent and include subsidised staff restaurant, sport and social facilities and BUPA. The company promote from within wherever possible and these appointments offer excellent prospects for career development and advancement. Salaries stated are negotiable for exceptional candidates.

The Company's Computer Headquarters are located to the West of Birmingham City Centre and allow easy access to the Staffordshire and Worcestershire Countryside.

For further details and a confidential discussion, telephone our Advising Consultant, Rod Beeson, on 021-236 3781 (24 hour answering service) or 021-777 8743 (evenings between 7.30 and 9.00 p.m. or weekends). Or, alternatively, write to him at the Birmingham office.



Specialist Computer Recruitment Ltd

London 01-838 0671 3 Mandaville Place, Wigmora Street, London W1M 5LB
Birmingham 021-236 3781 36-37 Great Charles Street, Queensway, Birmingham B3 3JY
Manchester 081-833 0427 Blackfriars House, The Parsonage, Manchester M3 2JA
Brussels 010 322-640 7151/71 Avenue Louise 327, Bolle 4, 1050 Bruxelles

SCRL

Systems Engineer Computer Assisted Design

c.£11,500

Unilever Engineering Division is seeking a Systems Engineer to take a leading role in the development of computer assisted draughting and design and its introduction to other locations.

The system in use is based on PDP-11 equipment and includes both graphics work stations and alpha-numeric terminals. The Systems Engineer will be required to help develop applications of this system and to assist with specification, installation and commissioning of planned extensions and future systems.

Male or female applicants should have a degree in a suitable scientific or engineering subject and a sound working knowledge of FORTRAN. Familiarity with RSX-11M and computer graphics will be a distinct advantage.

The position is based in Central London but some travel, both in the UK and abroad, is involved.

The Company offers free BUPA cover, 5 weeks' holiday a year as well as excellent Pension and Sickness Benefit schemes. Relocation expenses will be paid where necessary. Applications in writing, giving full career details to date together with present salary, should be sent to:

The Staff Manager (ref JEP13)
Staff Department,
Unilever UK Central Resources Ltd,
Unilever House,
Blackfriars,
London EC4P 4BQ.



HIGH FLYERS! FIELD SERVICE ENGINEERS MAYFAIR £8,000

Join our team of experienced field service engineers. We are looking for individuals with a strong background in electronics and a willingness to travel. The role involves diagnosing and repairing electronic equipment in the field. Salary is £8,000 per annum, plus benefits. Applications should be sent to: AB EXECUTIVE 01-549 6441.

AB EXECUTIVE 01-549 6441

SOFTWARE AUTHORS

CONTRACTS

MORRIS & CO. LTD

123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

INTERVIEW

and your

up to one

of travel

of travel

of travel

of travel

of travel

of travel

of travel

NEW ZEALAND

- Project Leaders
- Business Analysts
- Systems Analysts
- Analyst Programmers
- Programmers

to participate in a substantial information systems development embracing all activities of the BP Group of Companies in New Zealand

Emphasis is on developing —
— a comprehensive and user environment
— integrated database facilities
— a nationwide data communications network

BP New Zealand plays a significant part in the economy of the country and is —

- the market leader in the petroleum industry
- a major partner in the giant Maui gas fields
- also very active in chemicals marketing and natural resources development including oil and gas exploration, mineral exploration and forestry development

New Zealand has a wonderful climate with fresh air, sunshine and room to breathe — the most beautiful scenery in the world. Extensive recreational and leisure opportunities.

BP New Zealand Limited can offer you —

- a challenging and stimulating job
- a comprehensive and user environment
- integrated database facilities
- a nationwide data communications network

BP New Zealand Limited can offer you —

- a challenging and stimulating job
- a comprehensive and user environment
- integrated database facilities
- a nationwide data communications network

BP New Zealand Limited can offer you —

- a challenging and stimulating job
- a comprehensive and user environment
- integrated database facilities
- a nationwide data communications network

BP New Zealand Limited can offer you —

- a challenging and stimulating job
- a comprehensive and user environment
- integrated database facilities
- a nationwide data communications network

BP New Zealand Limited can offer you —

- a challenging and stimulating job
- a comprehensive and user environment
- integrated database facilities
- a nationwide data communications network

BP New Zealand Limited can offer you —

- a challenging and stimulating job
- a comprehensive and user environment
- integrated database facilities
- a nationwide data communications network

BP New Zealand Limited can offer you —

- a challenging and stimulating job
- a comprehensive and user environment
- integrated database facilities
- a nationwide data communications network

BP New Zealand Limited can offer you —

Mr G. J. Larsen
BP New Zealand Limited
c/o Accounts & Control Dept
BP Trading Limited
Britannia House,
Moor Lane
London EC2Y 8BU
Tel 01920-7788/8897
(Reverse Charges)

BPNZ Representatives will be arriving in London to conduct interviews with interested applicants shortly.

MYRIAD

SYSTEMS CONSULTANTS HARDWARE OR SOFTWARE

BERKSHIRE

CIRCA £10,500

A number of outstanding opportunities have arisen for both SOFTWARE and HARDWARE consultants as a result of the increasing demands being placed upon our client's SYSTEMS EVALUATION DEPARTMENTS.

Our client can offer you the opportunity to direct the development of future Hardware and Software in the key fields of:

- * SYSTEM USABILITY
- * SYSTEM RELIABILITY

To meet the challenge that these positions offer, applicants must have a successful record, and valid experience in one, or more, of the following areas.

SOFTWARE

- * SYSTEMS SOFTWARE DESIGN
- * OPERATING SYSTEMS PROGRAMMING
- * SYSTEM MODELLING

HARDWARE

- * PROCESSOR DESIGN
- * LOGIC DESIGN
- * SYSTEMS ORIENTATION

With key responsibility for:

- * DEFINING DEVELOPMENT OBJECTIVES
- * COMPETITIVE EVALUATION
- * OPERATIONAL ANALYSIS

Conditions of employment are excellent and good commencing salaries are enhanced by first-class career prospects and fringe benefits. A generous relocation package is available where appropriate. To apply telephone at any time, write or simply clip and return the coupon.

Ref. SW2/1707/CW

MYRIAD APPOINTMENTS LIMITED

30 Fleet London EC4Y 1AA Telephone 01-353 0981 24 hours

SEND TO: 30 FLEET LONDON EC4Y 1AA
I am interested in Ref. _____
Name _____
Address _____
Tel Day _____
Tel Eve _____

ANALYST PROGRAMMER — Sys 34s Wembley c. £8K

- * RPG II, Cobol essential
- * The Job — Real-Time Interactive Telecommunications
- * Possible international travel
- * 2/years' programming, some contact with analysis

Quote Ref: DJ80146

ANALYST — PROGRAMMERS — IBM North Kent to £7,300

- * Development work, Real-Time Interactive
- * Comprehensive training scheme for young dynamic team
- * Non-contributory pension, S + S, full relocation
- * 18 months' plus Assembler, Cobol and/or RPGII an advantage

Quote Ref: DJ80180

PROJECT LEADER Financial + Business Central London to £13K

- * Take a new project from start to finish
- * A good financial/stock exchange background
- * Good prospects

Quote Ref: DJ80170

BANKING ANALYST City to £10K + Package

- * Preferably programming background and Database experience
- * To develop on-line Banking System

Quote Ref: DJ80179

ANALYST/PROJECT MANAGER West End Negotiable

- * Assist in setting up new DP department
- * Be the Project Manager of a mainframe implementation
- * Large information system to be installed using RT Interactive TP
- * Very good career progression

Quote Ref: DJ80178

SYSTEMS PROGRAMMING MANAGER IBM City c. £11K + Car

- * Must have MVS experience
- * Strong systems programming background

Quote Ref: DJ79785

HEXAGON
computer services

TEL 01-439 3671

We only want the best.

Sales Executive

LONDON & THE SOUTH WEST



We are retained by our Client, who are a fast expanding wholly British owned Company to identify a professional Sales Executive to supplement their existing team.

The Product

Offering an uncomplicated, yet sophisticated range of software products, they are unquestioned market leaders in their field, they boast unrivalled support for their packages making them probably the most flexible, adaptable and indeed expandable in the market today.

The Candidate

Ideally, they are seeking a Sales Professional who has been selling mini or mainframe computer systems, software products, or bureau services successfully in a commercial environment for the past 2/3 years. Remuneration is by way of a high basic salary plus non-returnable guarantee and commission, yielding a first year earning potential of c.£18,500 plus, together with a range of outstanding fringe benefits enhancing this excellent package.

For an immediate and confidential interview where you will be supplied with full company information, Contact, Chris Fry ON 021-236 3781 (24 hour answering service)
OR 021-742 1992 (evenings and weekends).
Candidates are invited to submit Curriculum Vitae if preferred, where confidentiality is guaranteed.



Specialist Computer Recruitment Ltd

London 01-835 0671 3 Mandevilla Place, Wigmora Street, London W1M 6LB
Birmingham 021-238 3781 36-37 Great Charles Street, Queensway, Birmingham B3 3JY
Manchester 061-833 0427 Blackfriars House, The Paragon, Manchester M3 2JA
Brussels 010 322-640 7161/71 Avenue Louise 327, Boite 4, 1050 Bruxelles



Specialist Computer Recruitment Ltd

IN EUROPE AND THE UK

TECHNICAL MANAGER

Software House £12000 plus

Our clients, one of the most professional in their field in Europe, are looking for a Technical Manager to lead their fast expanding Software House.

As a member of the Senior Management Team, a sound commercial awareness, coupled with TECHNICAL AND MANAGEMENT proficiency, is necessary to manage the projects in real time applications and Microprocessor systems engineering.

The successful candidate, male or female, must have had experience in a software house and must have the ability to develop a team of software and support staff.

The ability to develop and progress contract work (existing and new customers) is also a prime requirement. Our clients are able to offer the successful candidate an extremely attractive salary and company car, together with excellent fringe benefits including participation in the Company Bonus Scheme.

Please write in confidence to:
Mike Bonworth, TEL: 01-221 0811, 18-21 Darnley Street, Wokingham, Berkshire, or telephone 0734 178844. (1072)



ESI
RECRUITMENT CONSULTANTS

PROGRAMMERS

The requirement is for COBOL/ASSEMBLER with more than 3 years' experience and with a knowledge of FORTRAN.

The work will involve substantial development of the time of our European office and is a full time position. A working knowledge of German/French is required and a good command of English is essential. The successful candidate will be offered a competitive salary and a company car.

For further details and an application form, please apply to: Mr. R. M. Jones, 18-21 Darnley Street, Wokingham, Berkshire, or telephone 0734 178844. (1072)

Apply in writing to: R. M. Jones, 18-21 Darnley Street, Wokingham, Berkshire, or telephone 0734 178844. (1072)

Apply in writing to: R. M. Jones, 18-21 Darnley Street, Wokingham, Berkshire, or telephone 0734 178844. (1072)

Apply in writing to: R. M. Jones, 18-21 Darnley Street, Wokingham, Berkshire, or telephone 0734 178844. (1072)

Apply in writing to: R. M. Jones, 18-21 Darnley Street, Wokingham, Berkshire, or telephone 0734 178844. (1072)

Apply in writing to: R. M. Jones, 18-21 Darnley Street, Wokingham, Berkshire, or telephone 0734 178844. (1072)

Apply in writing to: R. M. Jones, 18-21 Darnley Street, Wokingham, Berkshire, or telephone 0734 178844. (1072)

Apply in writing to: R. M. Jones, 18-21 Darnley Street, Wokingham, Berkshire, or telephone 0734 178844. (1072)

Apply in writing to: R. M. Jones, 18-21 Darnley Street, Wokingham, Berkshire, or telephone 0734 178844. (1072)

Apply in writing to: R. M. Jones, 18-21 Darnley Street, Wokingham, Berkshire, or telephone 0734 178844. (1072)

Apply in writing to: R. M. Jones, 18-21 Darnley Street, Wokingham, Berkshire, or telephone 0734 178844. (1072)

Lecturers in Computer Studies up to £14780

The Civil Service College provides management and vocational training for civil servants, and offers courses in computer studies which range from basic appreciation courses to those at advanced vocational and professional levels.

The College has a POP 11/34 computer and micro-computers, and terminals for use with these computers and with external facilities.

The London Centre now has vacancies on its lecturing staff. The work includes lecturing, tutoring, seminars, management games, computer-aided learning, and tutorial group correspondence. Lecturers spend up to half of their time teaching and the rest in preparation, research, further education, etc.

Candidates (aged at least 28), should normally have a relevant academic or professional qualification and at least 3 years' computer experience. The work demands high teaching skill, the ability to motivate and persuade experienced staff to accept new methods, techniques etc, for greater efficiency and effectiveness. Successful candidates without significant teaching experience will be given training in instructional techniques.

Appointments will normally be for a period of five years but may be less, with the possibility of extension, and in appropriate cases secondment for not less than two years may be considered.

Starting salary, according to qualifications and experience, will be in the range £8,380-£14,780.

For further details and an application form (to be returned by 1 August 1980), write to Civil Service Commission, Personnel Unit, Wellington House, 120 Whitehall, London SW1A 2BQ. Telephone (0204) 88881. (1072)

For further details and an application form (to be returned by 1 August 1980), write to Civil Service Commission, Personnel Unit, Wellington House, 120 Whitehall, London SW1A 2BQ. Telephone (0204) 88881. (1072)

For further details and an application form (to be returned by 1 August 1980), write to Civil Service Commission, Personnel Unit, Wellington House, 120 Whitehall, London SW1A 2BQ. Telephone (0204) 88881. (1072)

For further details and an application form (to be returned by 1 August 1980), write to Civil Service Commission, Personnel Unit, Wellington House, 120 Whitehall, London SW1A 2BQ. Telephone (0204) 88881. (1072)

For further details and an application form (to be returned by 1 August 1980), write to Civil Service Commission, Personnel Unit, Wellington House, 120 Whitehall, London SW1A 2BQ. Telephone (0204) 88881. (1072)

For further details and an application form (to be returned by 1 August 1980), write to Civil Service Commission, Personnel Unit, Wellington House, 120 Whitehall, London SW1A 2BQ. Telephone (0204) 88881. (1072)

For further details and an application form (to be returned by 1 August 1980), write to Civil Service Commission, Personnel Unit, Wellington House, 120 Whitehall, London SW1A 2BQ. Telephone (0204) 88881. (1072)

For further details and an application form (to be returned by 1 August 1980), write to Civil Service Commission, Personnel Unit, Wellington House, 120 Whitehall, London SW1A 2BQ. Telephone (0204) 88881. (1072)

For further details and an application form (to be returned by 1 August 1980), write to Civil Service Commission, Personnel Unit, Wellington House, 120 Whitehall, London SW1A 2BQ. Telephone (0204) 88881. (1072)

For further details and an application form (to be returned by 1 August 1980), write to Civil Service Commission, Personnel Unit, Wellington House, 120 Whitehall, London SW1A 2BQ. Telephone (0204) 88881. (1072)

For further details and an application form (to be returned by 1 August 1980), write to Civil Service Commission, Personnel Unit, Wellington House, 120 Whitehall, London SW1A 2BQ. Telephone (0204) 88881. (1072)

For further details and an application form (to be returned by 1 August 1980), write to Civil Service Commission, Personnel Unit, Wellington House, 120 Whitehall, London SW1A 2BQ. Telephone (0204) 88881. (1072)

For further details and an application form (to be returned by 1 August 1980), write to Civil Service Commission, Personnel Unit, Wellington House, 120 Whitehall, London SW1A 2BQ. Telephone (0204) 88881. (1072)

For further details and an application form (to be returned by 1 August 1980), write to Civil Service Commission, Personnel Unit, Wellington House, 120 Whitehall, London SW1A 2BQ. Telephone (0204) 88881. (1072)

SOFTWARE SALES

A leading North-West computer software house entering a period of rapid expansion seeks salesmen (or women) who offer:

1. Formal sales training or considerable sales experience
2. Experience of selling at Senior Executive or Director level
3. A successful track record

The candidates appointed will be selling in a wide variety of markets promoting packages, bespoke software and hardware and will include liaison with hardware manufacturers and existing customers as well as opening up new business.

In particular, we are expecting to promote package sales and the potential rewards in this area are considerable.

A realistic salary and commission will provide a very attractive five figure for successful, motivated sales people. Car or car allowance will be provided.

Ring in first instance to make an appointment or request information.

G. H. Brownhill Limited

Beech House

Hob Hay Lane

Culcheth

Warrington WA3 4NJ

Tel: Culcheth (0928-78) 4111



Is an American based company specialising in the design of computer systems for design applications. Our applications cover integrated circuits, printed circuit mapping and mechanical design. We are growing and have a requirement for at:

SENIOR FIELD ENGINEER

To be based in the Manchester area, the successful candidate will possess considerable field engineering experience in particular relevant to the design of computer systems. The successful candidate will be responsible for the design, development and testing of computer systems. This position is likely to be attractive to a very competent engineer, who also possesses some management potential, since successful performance will ensure opportunity to progress into supervisory duties. £8,000 + car.

Conditions of employment will reflect the high level of responsibility and will be very competitive.

Please write in the first instance to:

Mr Murray, Calma Company, Neville House, 45 West Street, Kingston upon Thames, Surrey.

Mr Murray, Calma Company, Neville House, 45 West Street, Kingston upon Thames, Surrey.

Mr Murray, Calma Company, Neville House, 45 West Street, Kingston upon Thames, Surrey.

Mr Murray, Calma Company, Neville House, 45 West Street, Kingston upon Thames, Surrey.

Mr Murray, Calma Company, Neville House, 45 West Street, Kingston upon Thames, Surrey.

Mr Murray, Calma Company, Neville House, 45 West Street, Kingston upon Thames, Surrey.

MICRO CONSULTANTS

Project Managers and Consultants, with broad knowledge of micro/minis required for specification and design of hardware and software for wide micro products range. Assembler, programming background essential, opportunities in London and Nth. Home Counties.

to £12k

GERMANY

Team Leaders, Analysts and Programmers with Real-time experience. Assembler and Fortran on minis required for large project by British Systems House in Germany. Work is in the scientific/technical area. Initial interview in London.

£14-£18k

PDP 11 UK & HOLLAND

Commercial experience, preferably on PDP 11s under RTST or RSX 11M, using BASIC taught by UK-based producer of turnkey business systems for their offices in Northern and Southern England, and Holland. Opportunities range from software support and development to consultancy.

£7-16k

CHESHIRE & HANTS

Senior Software Designers, Team Leaders and Programmers required for major command and control project. Burroughs large system experience essential with COBOL and ALGOL for programmers. MCP/Comos/NOL/DMS 11 for designers. Minimum of 2 yrs. exp. locations in either the North West or the South.

£7-11k

INT. BANKING

5 years + experience designing and programming International Banking Systems required for consultancy positions with this City office of a major Financial Consultancy and Systems House. Those currently enjoying subsidised mortgages should not be deterred from applying as considerable fringe benefits are offered.

£10-15k

Financial Systems

City - Programmers & Analysts

Programmers: if you have 2-3 years' programming experience in either COBOL or RPG II, and want to make a career in high-level financial systems work with a leading consultancy this is your opportunity. You will gain experience on a variety of machines, both minis and mainframes, and be able to learn new techniques such as TP and DB.

Analysts: a solid programming background is preferred, but your experience in financial systems (insurance work of special interest) will be highly valued. Knowledge of database techniques an advantage, as is experience of project leadership.

The Company: an International Financial System, House and Consultancy with several office in London and the Home Counties, offering outstanding benefits including profit-sharing, company share scheme, free BUPA and Life Assurance and non-contributory pension scheme.

Programmers to £9k
Analysts to £13k

MINIS MIDD. & SURREY

Knowledge of Interactive Systems, Interfaces and Interfacing at Analyst/Programmer level especially needed by manufacturer specialising in banking and small business systems. Experience on PDPs, DG or similar appropriate. Assembler plus one high level language preferred.

to £9k

MESSAGE SWITCHING

Consultants and Designers with experience in message switching gained on PDPs or similar equipment required by specialist division of major UK Systems and Software House. Consultants to be involved in pre and post sales. Project teams based in London.

to £11k

IBM NORTH WEST

Programmers with 2 years + COBOL (knowledge of Assembler or PL/I, a distinct advantage) are currently sought to work on a pension system involving extensive use of database and transaction processing. Relocation assistance offered.

£7-9k

WEST COUNTRY

Regional Managers (in Systems and Operations) to investigate cost effectiveness of existing business systems, carry out O-M Analysis for new systems within existing Strategic plans. Client liaison is an important feature of the roles therefore experience in this area advantageous.

to £9.5k

GRAPHICS - GERMANY

PDP-11 experience and knowledge of graphics required for recently opened German office of US company specialising in computer systems for the publishing industry. German advantageous but not a prerequisite. Long term prospects excellent as the company will be expanding and diversifying.

£12-17k



10 Grenville Place
London SW7 4RW
01 373 3063
to 9.30pm 7 days a week

If the job you're seeking isn't featured call Matrix - if that job exists we'll go to great lengths on your behalf.



JBA

Systems Analyst

London

Our client, a major banking organisation, is in the process of developing an International Banking System, currently using IBM 370s to be replaced by a 4300-series, with a direct link to the organisation's communications network. Young but highly professional team are being assigned to work on the business applications of the overall system. To join this project a minimum of three years systems or programming experience, with a least one major project from design to implementation, plus a good working knowledge of COBOL in a multi-programming environment is desirable. Sound banking knowledge would be a definite advantage.

Contact: Janet Chilvers

Sales Executive

London

A leading British manufacturer wishes to appoint a Sales Executive to take responsibility for territory in London selling small business computers and key-to-disk systems. Applicants must have a proven sales record but this need not necessarily be in d.p. Experience in office machines, technical equipment, etc would be considered. Enthusiasm, drive and the ability to close sales is of prime importance.

Contact: Jim Baker

Product Support Analysts

Berks

This well established software company, who specialise in computer performance monitoring packages and are market leaders in their field, require support analysts with proven systems programming ability. Ideally candidates will have gained experience using assembler in a MVS or VM/CMS environment but a good mini systems background could be equally valuable. Applicants must be prepared to travel within Europe and U.K. in user sites and be capable of liaising with clients in technical situations. An excellent benefits package complements the basic salary.

Contact: Brian Postle

Analyst Programmer

City

An excellent opportunity to join an international banking organisation, currently working on the development of various banking and financial applications. A minimum of one years CICS/Assembler running in a DOS/VS environment, with exposure to VM, CMS would be ideal. They have just taken delivery of IBM 4300, and you would be deeply involved with the conversion as well as the development of new systems. Successful candidates will be offered good career prospects plus all relevant benefits associated with financial institutions.

Contact: Janet Chilvers

Technical Adviser - IBM

near Victoria Station

Neg. to £9,200 + profit share
This is a marvellous opportunity to work for a leading international services organisation. As a result of continued expansion, they are now seeking an additional Programmer/Analyst to join their small but highly effective sales support team. The successful candidate will participate in various new projects in addition to taking on responsibility for several client accounts, conducting demonstrations and benchmarks, customer training and preparing proposals. The company have sophisticated (IBM) hardware and software; therefore applicants must be fully conversant with JCL, timesharing (TSO) and batch (MVS) systems. The ability to programme in COBOL, PL/I or FORTRAN is essential.

Contact: Margaret Stevens

Designers - Industrial Systems

Berkshire

A large well-known manufacturer has opportunities for Systems Designers to work on the development of real-time industrial systems using mini and micro-computers. Applicants must have at least four years experience in design and programming of automation, military or process control systems and should be familiar with a real-time language such as COBOL or RTL/2. Salaries are negotiable according to experience. Large company benefits including an excellent relocation package.

Contact: Jim Baker

Systems Programmer

Central London

to £8,500 p.a.
Eighteen months System Programming experience gained in a DOS/VS, CICS environment would be ideal for this exciting development position. However, if you have other IBM software experience and are keen to join an international bank, where you could develop into the software expert then please apply. The bank's main problem is that the software environment is going to be a full CICS based system. In preparation for the installation of an AS/400, so the experience to be gained is absolutely superb. Talent and ability are the main criteria, not specific experience. All normal banking benefits would apply, including such things as a cheap mortgage, insurance and season ticket loan.

Contact: Jim Baker

Programmers

Hampshire Coast

c. £7,000 + relocation
Our client has an immediate requirement for several programmers with minimum 18 months of CICS/COBOL and ideally knowledge of PL/I. You will have worked in a DOS/VS environment before on commercial systems and be able to demonstrate a desire to progress quickly. An excellent opportunity to capitalise on your existing experience.

Contact: Brian Postle

JAMES BAKER ASSOCIATES,
International Personnel Consultants,
32 Savile Row, London W1.
Tel: 01-489 9311

datascene

Cobol Programmers and Analysts Middlesex £6,500-£9,000

An international manufacturing company, whose reputation is based on quality, seeks self-motivated analysts and programmers for their U.K. headquarters. The Programmers should have at least 18 months' experience of COBOL for the IBM machines, preferably under OS/VS1. Salaries of c. £6,500 are offered. Analysts should have at least three years' experience with a history of completed projects. The salaries will be c. £9,000. Real time working is used and training is offered where needed. The benefits include a good pension and a car loan scheme.

ANALYSTS (Banking)

Central London To c. £8,500 + Profits

A leading central London banking organisation needs further experienced analysts for its head office. A minimum of two years' experience is required, ideally using IBM 3030 series or PDP machines. A programming background is necessary. The current real-time systems with C.I.C.S. are to be supplemented by Adabas. The company is seeking to expand its data-base involvement and will require the successful applicant to define data-base structures and implement them. The very generous banking benefits include cheap personal loans and mortgage facilities plus an annual bonus.

Systems Analysts

North London To £8,500

Our client is a well-known name in the manufacture of household commodities, who seek two systems analysts to complete their team. Applicants should be aged between 24 and 35, be educated to "A" Level standard, be well motivated and have a background of programming on IBM machines. The applications either in-hand or planned cover a wide range of activities for the whole group. Among benefits offered are restaurant facilities, non-contributory pension scheme (after two years), subsidised company products.

Basic + Or Aims Programmers

London/City £6500

Our client, a very well-known Merchant Bank based in the City of London, are looking for two programmers to augment their existing Data Processing Team. Ideally you should have approximately eighteen months' programming experience. The current configuration consists of numerous Digital PDP 11 series computers and current development work includes foreign exchange and real-time applications. Company benefits include interest-free season ticket loans, staff restaurant and low interest mortgage facilities.

Real Time Programmers and Analysts

Central London £ Negotiable

Analysts and programmers with real-time experience are urgently required by this long-established and successful software house. Applicants will have at least one year's experience of this type of work ideally on DEC or INTEL machines, but more experienced applicants are particularly required. The projects cover commercial and particularly technical work with control and communications systems using, typically Coral and Pascal. Company benefits include group BUPA, L/Vs. Facilities exist to purchase clothing at a discount.

Cobol Programmers

West London £7000

Due to further expansion this well-known bureau to the West of London are looking for COBOL programmers with at least six months' experience. Projects include bought and sales ledger applications and real-time development work, for which training will be given. Prospects are excellent and progression into systems and/or project management is very likely. Generous company benefits include four weeks' holiday.

Basic + 2 Programmers

London/City £7500

This major European bank are seeking to employ experienced programmers, ideally with at least one year's experience and a knowledge of BASIC + 2 and PDP equipment. Applicants can expect progression in a batch and real time environment and career progression will include systems training, excellent pension benefits, include season ticket loans, low interest mortgage facilities and staff restaurant.

Junior Programmers

London £ Negotiable

Datascene have been asked by several clients to recruit programmers at a Junior level. Experience in a working environment is essential, but the language and machine you are working with is irrelevant. If you feel misplaced in your current employment or you are thinking of changing direction then Datascene can almost certainly help you. Please call and let us assess your experience to date and hopefully help you in your chosen career.

Datascene International Limited
Scotia House,
156-173 Regent Street,
London W1R 7PB. Tel: 01-439 7871
24 hour answer phone 01-439 7871

ICL ME29 Systems Development Analyst

Middlesex c.£9000+benefits

Our client is a well known manufacturer and distributor of home recreation products with expanding interests in the international market, particularly Europe. To complement the business growth, the DP facility is undergoing technological advances which include the replacement of the existing ICL 2903 with ME29, and development of management information and production control systems based on ICL OMAC and BOMP.

Our client wishes to appoint a Systems Development Analyst who will play a crucial role in the development of systems within the areas of manufacturing, production and inventory control, and management accounting.

A background in ICL COBOL and at least 2 years analysis experience within a manufacturing or commercially orientated user environment are essential requirements. A knowledge of OMAC, BOMP and on-line applications is desirable but not essential as full training is offered.

Conveniently positioned for rail and road access, our client offers the successful candidate a competitive salary and benefits package in addition to an attractive working environment.

For further details, and to arrange an initial interview, telephone John Marshall, or write quoting reference JGM 3683.

**Lloyd Chapman
Associates**

123, New Bond Street, London W1Y 0HR 01-408 1670

UNIVERSITY OF NOTTINGHAM

SENIOR PROGRAMMER

A vacancy exists at the University of Nottingham within the Central Administrative Data Processing Unit for a Senior Programmer. The successful applicant will lead the programming team in the maintenance of existing programs, conversion of programs to utilise a disc based configuration, and writing new programs as new systems are defined.

The installation is currently based on an ICL 1801/40 Megabyte. Tape with programs written in 'PL/I' and 'COBOL' which is due for replacement in the near future.

The appointment will be made in the salary range £4,402-£8,738 per annum (under review).

Application forms can be obtained from the Staff Appointments Office, University of Nottingham, University Park, Nottingham NG7 2RD. Closing date for applications is 28th July, 1980. Please quote ref. 748.

(2017)

CONSULTANT PROJECT MANAGER

SALARY c.£10,000

An international software house requires an experienced D.P. professional to be in present responsible for a major project involving the design and development of a new system for a major client. The project involves the design and development of a new system for a major client. The project involves the design and development of a new system for a major client.

Applications should be sent to: Mr. A. G. Brown, 01-840 2000, quoting ref. AD8101.



As a progressive Northern Advertising Agency handling local and national accounts we are having to computerise our media booking and accounting systems and are therefore seeking a -

DATA PROCESSING MANAGER

Reporting to the Directors, the successful applicant will have previous experience with Burroughs installations, preferably B80 and B800, and also knowledge of and interest in COBOL programming.

The person we are seeking could well be "second in command" at their present installation, but has the maturity and confidence to assume the full responsibility for the running of the department on a day-to-day basis, including the scheduling of work, ensuring all staff are properly trained, standard procedures clearly defined and documented etc.; but will also be deeply involved in the continuing development and improvement of present systems as well as the possible introduction of new systems.

In return we are offering a good salary and working conditions, pension scheme, B.U.P.A. membership and relocation expenses if necessary.

Please apply in writing, stating salary required and details of career to date, to:

The Chairman,
Barry Cooke Advertising Limited, 102 Beverley Rd, HULL HU8 1YA

This vacancy is open to male or female applicants (1196)

DATA PROCESSING MANAGER

Applications should be sent to: Mr. A. G. Brown, 01-840 2000, quoting ref. AD8101.

SOUTH GLAMORGAN COUNTY COUNCIL SOUTH GLAMORGAN INSTITUTE OF HIGHER EDUCATION FACULTY OF SCIENCE DEPARTMENT OF PHYSICAL SCIENCES & MATHEMATICS LECTURER GRADE 1 IN COMPUTER STUDIES

Salary Scale: £4,581-£7,784 p.a.

Applications are invited for the above post to commence on 1st September 1980. The successful applicant will be responsible for the teaching of programming and computer science modules including British Computer Society, DCE 'A' Level and CIPD Level 1.

Candidates should be graduates or equivalent and must be competent to teach. The Department has a multi-access computer system and a range of other facilities.

Applications in writing with C.V. to Mrs A. R. Jones, 6th Floor, Glamorgan Square, London, S.W.1 (Phone 01-581 4262).

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611

2/10ths of our systems have yet to emerge

YOU
CAN HELP
BRING THEM
ON

ASSEMBLER LEVEL PROGRAMMERS to £10k + car

The emergence of totally integrated computer systems is without doubt the most exciting development of this decade.

The world's leader in this field is searching for the skills to develop the latest technology — to mould the future — now.

Within this small group you will have the freedom to express and develop your ideas, working in an ideal environment 20 miles west of London.

ADD to this a car, BUPA, Life Assurance, 4 weeks' holidays and bonus

YOUR FUTURE LIES IN THEIRS

Contact Patsy Ogilvie now on 01-637 9611

Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637 9611

MANAGEMENT &
EXECUTIVE SELECTION

01-637 9611

Specialists since 1971 in UK and International computer appointments. We have many other jobs on our files and offer a career counselling service to computer professionals.

OCC Computer Personnel Ltd
4 Church Lane, Nantwich, Cheshire CW5 5RD
Telephone: 0270 627206
also at
16 Bedford Row, London WC1R 4EB
Telephone 01-242 9356 Telex: 268652



Mainz West Germany

Analyst Programmers — c £13,000

IBM370/158 & 4341; Manufacturing systems; ASS & CICS

Two analyst programmers are required to join the development team of this substantial German enterprise which manufactures a wide range of products in the field of glass, optics, etc. A minimum of three years' experience is required and this should include IBM ASSEMBLER, COBOL or PLI and CICS. Experience of COPICS, CAPOSS, etc., would be an added advantage. Know-

ledge of German is not essential, although serious candidates should be prepared to learn. Relocation expenses will be paid.

LONDON INTERVIEWS:
FRIDAY, 1st AUGUST
followed shortly by final interviews in Mainz

For an initial discussion, phone Neville John on Nantwich (0270) 627206
or Karen Rizzello on 01-242 9356. Alternatively, write to Neville John at our Nantwich office

D.P. MANAGER

CARLOW, IRELAND

Brown Ireland Limited, an expanding constituent of the Gillette Company, employs in excess of 800 people in the manufacture of electroplating products in the home appliance field. The plant is located at Carlow — one hour's drive from Dublin. A D.P. Manager is now to be appointed.

The Company currently operates an advanced IBM/34 installation of the maximum configuration available; 22 workstations; MAPICS manufacturing modules; full suite of on-line accounting modules; IBM 5230 time entry system and a micro-processor based production monitoring system. The D.P. Manager will be responsible for the maintenance and enhancement of the installation.

Candidates, who should have had significant prior experience as computer specialists in the manufacturing sector, should have the capacity to effectively communicate across the organisation and to develop subordinate staff.

Salary will not be a limiting factor. An attractive fringe benefit package, including a company car will be provided and relocation allowances, if applicable, will be paid.

Candidates should send comprehensive personal, career and salary details to John Woods at Harcourt House, Harcourt Street, Dublin 2. Please quote Reference No. 1942.

Peat Marwick Mitchell & Co.
(Management Consultants) Ireland
DUBLIN, CORK, LIMERICK, BELFAST & GALWAY

UNIVERSITY OF BIRMINGHAM

Computer Centre

RESEARCH FELLOW

Applications are invited for this three-year post to work on British Library funded project on development of an electronic journal.

Candidates should have good honours degree and preferably a relevant higher degree as well as considerable experience of software development. An interest in problems of man/machine communication an advantage.

Salary on Research Fellow 1A range £6082-£8768 per annum (under review) plus superannuation.

Maximum starting salary £8736.

Informal enquiries to Professor P. J. J. (021) 472 1301, Ext. 2233.

Further particulars from Mr. A.C. Beddoe, Assistant Registrar (Sci. and Eng.), P.O. Box 363, Birmingham B15 2TT (021 472 1301, Ext. 3133) to whom applications (3 copies) including full curriculum vitae and naming three referees should be sent by Friday, August 1st, 1980.

Please quote reference CW/24

(0049)

Senior Computer Operator

circa.£6,200
(including shift allowance)

At Citroën Cars, we operate an efficient computer system which supports the Sales Administration and Accounts Departments, processing information on a real time basis.

We have two sites, one at Mill Street, Slough, and the other at our warehouse in Runnymede. The successful applicant will spend their time alternating between the two sites, therefore, own transport is essential.

We now wish to appoint a Senior Computer Operator who will be expected to have had at least 3 years experience, of which at least 1 year should have been in a supervisory capacity.

You will be fully trained to operate the Citroën computers. We, therefore, are seeking a self-motivated, responsible person, capable of working without supervision.

It is a 37½ hour week, on a two shift system, and weekend work will be necessary to meet work load requirements on a monthly basis. Premium rates of pay are offered.

Apart from the salary of about £6,200 (including shift allowance) other Citroën benefits include staff discount on cars and parts, 4 weeks annual holiday, subsidised restaurant and a contributory pension scheme with free life insurance.

Please apply in writing to: Helen Sharp, Personnel Officer, Citroën Cars Limited, Mill Street, Slough, Berks.

CITROËN

COMPUTER FIELD ENGINEERS

Fast growing firm of computer engineers and software developers providing Business Information Systems and Software Development. If you are experienced in Business Information Systems and Software Development, please send your CV to: DEE EXECUTIVE (AGY) LTD, 549 9251

BOX Nos.

Box No. 1: Computer, Word, Data, Print, etc. Box No. 2: Computer, Word, Data, Print, etc. Box No. 3: Computer, Word, Data, Print, etc. Box No. 4: Computer, Word, Data, Print, etc. Box No. 5: Computer, Word, Data, Print, etc. Box No. 6: Computer, Word, Data, Print, etc. Box No. 7: Computer, Word, Data, Print, etc. Box No. 8: Computer, Word, Data, Print, etc. Box No. 9: Computer, Word, Data, Print, etc. Box No. 10: Computer, Word, Data, Print, etc.

BASIC + RSTS PROGRAMMER

NEW YORK

1 YEAR MINIMUM
TEL: 01 606 8900 (24 hour service)

PROGRAMMERS FOR ENGINEERING AND SCIENCE

We are a specialist agency covering the field of ENGINEERING & SCIENCE. If you have experience in the above areas, please send your CV to: ASSEMBLER, COBOL, or any other. Salary range language please, contact RAY DANKER on 0222 51321 for a confidential discussion regarding your career prospects. SALARY RANGE £4000-£10000 ALL AREAS. (Birmingham Southern Ltd & Crawford High Street, CRAWFORD, KENT)

\$20,000 - \$30,000 pa

To Work in the USA - The ACSIS Way!

Have you thought of working in America? - But never done anything about it because you've been worried about:

The Cost of Living? - Accommodation? - What to do with your house in the UK? - Schooling for the children? - National Health (or lack of it)? - Visa Applications? - Tax? - etc, etc,

ACS INTERNATIONAL SYSTEMS INC. have been sending staff to America for 6 years, and after transferring over 150 people from the UK we reckon we've met and solved very nearly every problem there is!

● ACSIS will take very special care of you, your wife and family and look after all the organisational problems involved with moving abroad.

● ACSIS will pay you **FULL US SALARIES** with **THE MOST COMPREHENSIVE MEDICAL INSURANCE SCHEME AVAILABLE** to work as Consultants on site with our clients - we don't believe in cheap British "Slave Labour".

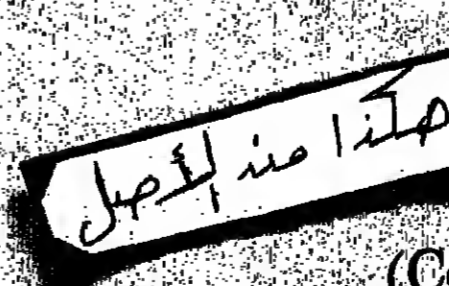
● ACSIS offer full re-location expenses, organise flights, baggage, and accommodation for you and your family.

● ACSIS have 50 people (some married with children) currently working in the USA so you'll not lack for friends - the social life enjoyed by ACSIS consultancy staff is second to none!

● If, despite the care and attention lavished upon you by our staff, you still don't like the USA, **we'll fly you back to the UK after only 6 MONTHS**. So you can carry on your career over here with the minimum of interruption.

In return for this initial 6 month's commitment ACSIS offer **PROGRAMMERS AND ANALYSTS WITH IBM COBOL AND/OR TWO YEARS SYSTEMS EXPERIENCE** the opportunity to gain valuable in-depth experience in Banking/Financial installations which use all the most up-to-date Database, On-Line and Communications Equipment.

Expense-paid interviews in London during the last week of August 1980 - send your resumé to IAN COX or telephone him on 01-278 6426 (day) or 01-272 2794 (evenings and weekends).



ACSIS
(Consultancy & Support Services) Ltd.
37-39 Bowling Green Lane, London EC1R 0BJ

URGENT REQUIREMENTS
For NCR NEAT and/or COBOL PROGRAMMERS
IMS, TSO, CICS DB/DC
NEW YORK, W. COAST DALLAS!

nihe
limerick

THE NATIONAL INSTITUTE FOR HIGHER EDUCATION

The Electronic Engineering Department offers first year degree level programmes in Electronic Engineering and in Computer Science, as well as three year first degree programmes in Industrial Electronics, Computer Engineering and Information Systems. Postgraduate programmes are available in all the above fields. The Department is also involved in research and development work in the field of microprocessors and in the development of new materials for electronic devices. The Department is also involved in the development of new materials for electronic devices.

Several new posts are now available as Lecturer / Assistant Lecturer in Electronic Engineering and are to be filled in the areas listed below. Normally it is expected that applicants will hold an advanced degree.

SIGNAL PROCESSING / COMMUNICATIONS ENGINEERING
An appropriate background would include training and research in signal processing, communications engineering, or applications of signal processing.

COMPUTER SOFTWARE
Suitable experience would be in computer software and language design or in the development of software for microprocessor based systems.

TRANSDUCERS / SEMI-CONDUCTOR DEVICES
Experience in the research and development of special purpose hardware, particularly semiconductor devices is required.

DATA COMMUNICATIONS / COMPUTER NETWORKS
A background in Satellite Data Communications, Computer Networks or some other aspect of data networks is required.

SALARY SCALES
Lecturer £8,013 - £11,848 p.a. (London rates)
Assistant Lecturer £6,790 - £8,478 p.a.

Application forms available from the Personnel Office, The National Institute for Higher Education, Limerick, Ireland, or a Curriculum Vitae should be submitted by Friday, 18 August, 1980. (18/80)

SALES DIRECTOR (DESIGNATE) WEST YORKSHIRE

H & M Computers are seeking to recruit for a key post in the company's development phase.

The person appointed will have sufficient drive and enthusiasm to enable him to contribute materially towards the achievement of the company's ambitious expansion plans. He/she will have extensive experience in selling in the small/medium commercial sector.

In return the company offers a considerable degree of autonomy, the opportunity to play a positive role in the formation of marketing strategy, the appointment to directorship after an initial proving period, an above average salary and attractive fringe benefits.

Write enclosing C.V., or telephone: M. C. Emsub, H & M Computers Ltd, P.O. Box 868 Huddersfield, Phone 22200. (16/80)

GREATER MANCHESTER HEALTH BOARD

SENIOR SYSTEMS DESIGNER

Scale 14 £7,000-£9,000 p.a.

Computer Centre, 1-21 Park Circus, Glasgow.

Applications are invited from suitably qualified and experienced persons for the above post.

Candidates will need considerable experience in the design and development of computer systems and in the use of a variety of computer languages. They should also have experience in the design and development of computer systems and in the use of a variety of computer languages.

Application forms and further details may be obtained from the Personnel Office, Greater Glasgow Health Board, 35 Sauchiehall Street, Glasgow G2 3HT, to whom completed applications should be returned no later than Friday, 1st August, 1980. (16/80)

UNITED KINGDOM ATOMIC ENERGY AUTHORITY

Computer Specialists

The United Kingdom Atomic Energy Authority's establishment at Winfrith, which is situated between Bournemouth and Weymouth in Dorset, has vacancies for

COMPUTER SCIENTISTS

The Establishment is amongst the major users of computers for research and development in Britain. A dual ICL 2976 configuration with 8M bytes of mainstore and a large complement of peripherals has recently been installed and a substantial programme of development is in hand. Two Perkin-Elmer 832 minicomputers are being developed to handle terminal networks on and off site, and many smaller computers are also used.

Although experience in minicomputer systems, computer-related telecommunications or mainframe software would be an advantage, we would also be interested in hearing from graduates and post-graduates with user experience in computing systems who would like to move into the field. In addition, opportunities exist for applications programmers with scientific or engineering backgrounds. Candidates are normally expected to have honours degrees in relevant subjects. Appointments will be made to the Scientific, Higher Scientific and Senior Scientific Officer grades within the ranges:

Scientific Officer: £4,080 to £5,875 p.a.
Higher Scientific Officer: £5,455 to £7,210 p.a.
Senior Scientific Officer: £8,780 to £9,315 p.a.

All salary scales are at present under review.

The Authority offers an attractive package of benefits, including an excellent contributory superannuation scheme.

Housing assistance is available to a married person living beyond daily travelling distance.

Please write for an application form to: Appointments Officer (A), Personnel Branch, A.E.E., Winfrith, FREEPOST, Dorchester, DORSET DT2 8DH. Telephone Dorchester (0305) 3111 Extn. 2686. Quoting reference WA 340. (18/80)

Winfrith

SYSTEM 10 PROGRAMMER/ANALYST CENTRAL LONDON

Looking for more responsibility in a medium-sized operation where your contribution is visible and will quickly lead to management promotion?

This opportunity has arisen after four years because only now does the job holder reluctantly want and need to move to an even bigger job. It says much for the department, the work, and the system, which offers a great deal in every respect - including the prospect of an even bigger challenge in the near future.

The configuration is a dual ICL System 10 installation handling a very wide range of commercial applications. Gradually it has become even more complex as additional functions have been added. But some of the knottier and more interesting problems remain, combined with at least two years study, recommendation and implementation of the next generation, which will be as comprehensive as the small and highly involved team believe to be practical.

With only 300 employees and a DP section of 13, this is an organisation where you can relate to everyone, where you are listened to and encouraged to seek imaginative solutions, and where you can also enjoy a salary of around £8,000 and excellent conditions.

In fact, this really is an outstanding opportunity for a good programmer with systems design experience - preferably three years.

If you'd like to know more, please phone Ron Westcott on 01-437 9261. (20/80)

Analyst-Programmers

Small and medium sized companies are seeking experienced Analyst-Programmers for their computer systems. The ideal candidate will have a degree in a relevant field and several years' experience in the design and development of computer systems. They should also have experience in the use of a variety of computer languages.

Application forms and further details may be obtained from the Personnel Office, Greater Glasgow Health Board, 35 Sauchiehall Street, Glasgow G2 3HT, to whom completed applications should be returned no later than Friday, 1st August, 1980. (16/80)

Trainee Computer Programmer Ealing, W5

Trusthouse Forte Hotels Ltd., have a computerised hotel reservations system located in Ealing W5, and we now need a Trainee Programmer for an IBM 3780 mini computer system to assist the Systems Analyst.

The position will entail a fair amount of liaison in addition to programming, necessitating an outgoing and confident personality.

If you have 1-2 years' practical experience in any high level language, we will train you if necessary.

Trusthouse Forte Hotels offer excellent company benefits, including four weeks' annual holiday, discounts on hotel accommodation, package holidays, and discounts on private medical insurance schemes and consumer goods. Promotional prospects within the Company are excellent.

For an application form, please telephone or write to: Mrs. V. Collins, Personnel Officer, Trusthouse Forte Hotels Ltd., Paramount House, 71-75 Uxbridge Road, Ealing W5. Tel: 01-579 9101

TRUSTHOUSE FORTÉ HOTELS

Anglo-Australian Observatory COMPUTER PROGRAMMER

The Anglo-Australian Observatory has vacancies for computer programmers to join the software group at the AAO Laboratory in Epping, N.S.W., Australia.

The Observatory operates the 3.9 metre Anglo-Australian Telescope at Siding Spring, near Goonah, N.S.W., 460 kms northwest of Sydney, one of the largest and most modern optical telescopes in the world. Extensive use of computers is made by the Observatory, from real-time instrument control and data acquisition to reduction and analysis of observations. Five large Interdata Model 70 configurations are operated, three at the telescope and two at the Laboratory. Two DEC VAX-11/780 systems with large memory and disc resources have recently been ordered and installation is expected to begin in October 1980.

A major instrument development effort is about to begin, and the arrival of the VAX computers means that the successful applicant will be faced with a wide variety of extremely challenging tasks, ranging from real-time instrument control to interactive picture processing.

The appointment will be made within the Experimental classification 11429-923404 p.a. The commanding post will depend on qualifications and experience. The position is based at Epping, but occasional short visits to the telescope site will be necessary.

Conditions: Basically similar to those of the Australian Service. Superannuation is available. The Observatory has a large and reasonable removal expenses to Sydney and with full travel.

Applications: Write stating personal details, qualifications, experience, position now held, and enclosing the names of three referees to: The Director, Anglo-Australian Observatory, P.O. Box 215, Epping, N.S.W., 2121, Australia, by 5th August, 1980. (20/80)

Immediate Contract Vacancies

PROJECT LEADERS ANALYSTS PROGRAMMERS

IBM 3031
CICS DL1/IDMS and COBOL
IBM 370/148 DL1 COBOL
ICL COBOL, IDMS

SIEMENS ASSEMBLER

U.K. and Overseas

Telephone: PETER NIGHTINGALE
Fleet 21768

White & Nunn

THORBAR LTD.

(RECRUITMENT & CONSULTANCY SERVICES)

GREENOCK HOUSE
19 CUCKFIELD ROAD
HURSTPIERPPOINT
WEST SUSSEX

Telephone Number:
Hurstpierpoint 833848
(24-hr. answering service)

TECHNICAL OPS. CONTROLLER

to £9,000 + Benefits + Review after 3 months

MIDDLESEX/SURREY BORDER

Our client operates System 32 and 34 hardware on two sites. They have a need for a person with IBM GSD experience able to contribute to an already highly effective Management Services Unit.

The major responsibilities will be to:

- Contribute to the technical design of all new systems.
- Review and improve software performance and operations procedures.
- Manage the scheduling and running of live systems.
- Advise on future hardware requirements.

The ideal candidate should possess:-

- Sound RPG 2/OCL.
- System 3, 32, or 34 background, preferably obtained within a software house or similar environment, although this is not essential.
- The right personality to blend into a small enthusiastic unit.
- Some Operations Experience.

The vacancy would probably suit an Analyst/Programmer seeking full scope for their talents in a supervisory role.

ASSISTANCE WITH RELOCATION IF NECESSARY

Ref: CW/41/80

COBOL PROGRAMMER

TO £8,500 + 3 MONTH REVIEW

BERKSHIRE

Close to M4/A4 Motorways

If you have up to 2 years' COBOL (knowledge of IBM OS a positive asset) YOU COULD BE EARNING £10,000 BY THE AUTUMN. If you think you are a cut above the ordinary, why not capitalise on it.

Our client uses an IBM 370/3033 under OS/MVS and is within easy reach of Middlesex, Surrey, Bucks and Berkshire.

For further details contact JACK COLLINS at his office - 0273 833848 (9am-5pm) or any evening or weekend after 5 pm on 0273 400880. Local interviews can usually be arranged.

Ref: CW/42/80

COMPUTER WEEKLY, July 17, 1980 33

Recruitment **LOGISTIX** In Informatics

SNA & Telecomms

Rheinland Germany : Salary to £20K

Our client, established in West Germany for many years, has vacancies in three Rheinland cities for Systems Programmers, Software Development Specialists and Project Leaders. These outstanding opportunities are in the areas of Data Communications, Message switching (with particular reference to SNA techniques) and Mini/Micro Software Development. Successful applicants will be either graduates in a numerate subject or alternatively, have practical experience in advanced distributed processing and networking applications on mini-computers or dual processors. We anticipate that you will be aged 27-35 years, have a little German language knowledge (thoroughly helpful and not a prerequisite for relocation at the Company's expense) for several years to the Federal Republic. Ref: L/29/A

Office & Business Systems

West of London and City : to £11K

A well established Systems Division of a Mini-Computer Manufacturer seeks Applications Programmers and Systems Analysts for its two London based divisions. Applications Programmers should offer a minimum of one year's experience of either BASIC and/or Assembly. Business Analysts should have recent Business and Financial Applications experience on any mini/micro based system in one of the following: Stock/Inventory control, Accounting packages and Payroll/Personnel records. These positions will be of particular interest to young and ambitious professionals who whilst keeping in touch with technical developments also have a real opportunity to substantially increase their income and career progression. In addition to excellent salaries the Company pays an annual bonus based on individual performance and overall profitability. Ref: L/29/B

Graphics Applications

Home Counties : Salary to £13K

One of the market leaders in the manufacture and sale of graphics terminals and instrumentation devices has a requirement for Project Leaders and Consultants to assist in the development, installation and support of the Company's software packages. An in-depth knowledge of FORTRAN supplemented by CAD/CAM techniques is essential. Successful applicants will also have a background in mini-computers operating in an on-line environment. In addition to highly competitive salaries our clients will for certain positions offer a car allowance whilst all positions command the usual large company benefits. Ref: L/29/C

Cobol Programmers

Central and Greater London : Salary £6.5-£8K

A renowned Software Products and Consultancy Group is seeking COBOL Programmers to join a young and successful team working on numerous projects in both Central and Greater London. Suitable candidates should be currently employed by a large Data or Software House operating in the field of data processing, Banking/Insurance or Retailing. You will probably have had in-depth involvement with Payrolls, Stock/Inventory Control, Sales and Bought Ledgers. Whilst our client has no preference for particular hardware experience, current or very recent knowledge of IBM, DEC, ICL or HP equipment will be a distinct advantage. Similarly, those candidates who can offer Database and/or on-line skills will be especially favoured by our client. Ref: L/29/D

Commercial Systems

Benelux : Salary to £22K

A Corporation of U.S. origin, well established in Benelux and France, requires additional Systems Designers and Commercial Analysts to join its permanent staff in either the U.K. or Brussels office. Successful candidates should be aged 28-35 years and offer Accountancy or Management/Consultancy experience. Bank Holiday (Retail or Merchants), Stockbroking or Production Planning expertise with a large scale IBM, Burroughs or Honeywell user. All positions will entail a degree of national and international travel. It is an added advantage to speak reasonable French or German for business and social reasons. Interviews can be arranged in U.K., Holland or Belgium. Ref: L/29/E

Database Analysts

Thames Valley : Salary £13K + Benefits

A major International Supplier of Teleprocessing and Database Systems has recruited LOGISTIX to identify and recruit several IBM orientated Data Systems Analysts for its U.K. Headquarters. Applications areas will include manufacturing, production, materials control and scheduling. Software involvement will ideally have included one or more of CICS/VS, TOTAL, SHADOW, DBOMP, MAPICS, IMS, IDMS or RAMIS. A feature of all these positions is the high degree of client contact in the form of seminars, product demonstrations, feasibility studies, reporting, live implementation and problem solving. For some positions candidates are not required to live locally and applicants from diverse areas are encouraged to apply. Ref: L/29/F

Information Consultants

London : Salary to £14,000

Our client is a leading consultancy and communications product specialist based in the centre of London. Owing to a rapid increase in the demand for its expertise in the areas of office automation and information systems technology, additional Senior Consultants are required. Suitable applicants will have current or very recent involvement with Systems Network Architecture (SNA), preferably using IBM software and hardware. Those who have experience of electronic mailing, text and word processing will, of course, be particularly welcome. However, more important will be the ability to lead project teams developing state-of-the-art software. Our client also seeks the personal qualities of self-confidence, good presentation and self-motivation. Ref: L/29/G

Logistix, 10 Grenville Place London SW7 4RW

01-273 3063 **LOGISTIX** Telex: 288900

Wakefield Area Health Authority

Western District (Wakefield)

COMPUTER OPERATIONS SUPERVISOR

Pinderfields General Hospital

Wakefield Area Health Authority, Western District (Wakefield) wish to appoint a Computer Operations Supervisor (female or male) to work within the Information Services Department at Pinderfields Hospital. The new appointment will be on the General Administrative Grade and salary for a 37 hour week is on a scale from £4,410 (£5,537 currently under review). Now enquiries to the National Health Service commence at the minimum of the scale.

Responsibilities will include the day to day management of a Burroughs 580 mini computer system engaged in the provision of management information on the cost of drug issues, and the development and implementation of a stock control system for the District Pharmacy.

Previous experience of computer operations, preferably on a small business system, would be desirable. A knowledge of programming in COBOL would be an advantage. Appropriate training in the operation of the 580 system will be provided for the successful applicant.

Application forms and job description are available from the Acting District Administrator, Wakefield Area Health Authority, Hatfield Hall, Aberford Road, Stanley, Wakefield. Closing date 1st August, 1980.

(2074)

Operational Research Programmer

CRYDON
Salary within range: £8,690-£9,278 p.a.

We're looking for a motivated, experienced Operational Research Programmer in FORTRAN and a desire to work with APL. You will join the Operational Research Section in SECAS, which is part of the Management Services Department; it is 20 strong with a go-ahead, keen and ambitious outlook. Our Project Teams are currently working in Corporate Planning Modelling, Budget Modelling, stock control, vehicle replacement, telephone answering simulation and several other planning fields.

Projects for which specialist skills in programming are required, are handled by the Programming Team, and a vacancy has arisen to strengthen this team to meet the workload. Current Projects include Management Information Systems software, APL, technical advice on BASIC programming, use of micro-computers and standards of programming.

Members of the Programming Team are expected to liaise frequently with user departments, to give advice where appropriate and to produce documentation.

Self-motivation is required and there is plenty of scope for initiative. For further details ring Robert Martin on 01-585 4488 ext. 591 or Chris Gregory ext. 593 or at home (evening) 01-585 4488 ext. 591 or write giving full details to The Personnel Manager, South Eastern Gas, 88-92 House, Katherine Street, Croydon CR9 1JU, quoting reference no. 0.8921.

SOUTH EASTERN GAS

(2018)

GERMANY CONTRACTS

+ MANY U.K.

PERMANENT JOBS FOR IBM PROGRAMMERS
ALL SYSTEMS

FOR GERMANY:
(Applicants must speak German, 3-5 years' experience with IBM 370 or DEC hardware).

Programming languages: COBOL, PL/I, ASSEMBLER for IBM 370 and FORTRAN/ASSEMBLER for DEC equipment.

FOR U.K.:
(Applicants must have three years' design experience of computer systems, IBM Systems, three years' experience of PL/I, COBOL).

Send resume to PRCO (Germany) Ltd, 127 St. Margaret's Road, Tunbridge Wells, Kent, TN11 1JL.

ANALYST/PROGRAMMERS

London IBM Cobol/PL1/Basic

Tel: Roger Barnes on 01-828 4200
486 Copthall Avenue, EC2R 7DA

SEDA

Systems Analysts in Insurance

Make your next move to Horsham
c. £9000

with Sun Alliance, one of the country's leading Insurance Companies.

The Computer Systems Department of our Life Division operates from modern offices in Horsham - a delightful area within easy reach of the South Coast, beautiful Sussex countryside and Central London.

Our IBM 3033/2/1 hardware supports a nationwide teleprocessing network of over 500 terminals, using Quesada techniques.

Opportunities exist for experienced Analysts to handle all stages of a variety of projects, dealing with users at all levels.

The successful candidate will probably have a degree or relevant qualification. Knowledge of life assurance or pensions applications would be an advantage.

In addition to a highly competitive starting salary, depending on experience, large insurance company benefits include non-contributory pension scheme and, where appropriate, mortgage allowance and assistance with relocation.

For an application form please contact: Susan Ward, Sun Alliance Insurance Group, 1 Bartholomew Lane, London EC2N 2AB. Tel: 01-585 2345, ext. 1237.

These appointments are open to men and women.



SUN ALLIANCE
INSURANCE GROUP

(1890)

D.P. MANAGER
GLASGOW
£12,000 plus car

Our client has retained us to find a manager for a city centre installation. The successful applicant should have extensive experience in the following areas: Considerable management experience. Production and accounting systems knowledge. Awareness of importance of good customer relationships. Responsibility for systems and programming team. On line experience preferably on I.C.T. 2904 hardware.

The importance of the above positions is reflected in the salaries and attractive accompanying packages.

If you have the necessary qualifications and experience for any of these posts, please telephone or write with brief details to:

ALEX DALY
COMPUTER STAFF APPOINTMENTS

134 St. Vincent Street
Glasgow G2 5JU
Tel: 041-221 4166

63 George Street
Edinburgh EH2 2JG
Tel: 031-226 3163



Also at Aberdeen

(2009)

DISTRIBUTED SYSTEMS LIMITED

RECRUITMENT DIVISION

PERMANENT

SENIOR ANALYST

ANALYST/PROG.

ANALYST/PROG.

ANALYST/PROG.

ANALYST/PROG.

ANALYST/PROG.

ANALYST/PROG.

ANALYST/PROG.

ANALYST/PROG.

ANALYST/PROG.

ANALYST/PROG.

ANALYST/PROG.

ANALYST/PROG.

ANALYST/PROG.

ANALYST/PROG.

ANALYST/PROG.

ANALYST/PROG.

ANALYST/PROG.

ANALYST/PROG.

CITY MAGIC! OPERATOR

PROGRAMMING OPPORTUNITY
USING INTERACTIVE MINI
Up to £5500 + BONUS

Our Client, a well established Company with around 150 employees, is installing its own large main computer system later this year. They offer an experienced operator a chance to expand his/her data processing experience into the following fields with full training given:-

- Interactive mini operating systems
- High level programming languages
- User liaison, system testing and parallel running

They seek a stable, presentable person who would like to work in a lively office in Finsbury Circus, EC2, close to tube and mainline stations, providing easy access to all parts of Greater London.

If you have operating and data control experience, with clerical ability, and would like to expand your horizons without doing night work, then please ring us quoting reference 287 or write briefly.

(2008)



EDP SYSTEMS 01-637 5796
52-53 Margaret St. London W1F 7FF

PHILIP MORRIS LIMITED is a successful international packaged goods company, whose products include such brand leaders as Marlboro and Chesterfield cigarettes, Seven-Up and Miller Beer, with a fast-growing company in the U.K. Presently located at Brentford, but relocating to Feltham, Middx. in July.

SENIOR COMPUTER PROGRAMMER

Ideally with at least 3 years' IBM mainframe operating experience and a knowledge of DDS/VS (E) on an IBM 370 with a working knowledge of JCL.

Duties will include the provision of a comprehensive support function for development and users of the IBM 4331 and implementation of in-house European operating standards and procedures.

COMPUTER PROGRAMMER

Applicants must have at least 2 years' experience of COBOL and CICS on IBM mainframes, and the ability to specify and code computer programmes for specified systems in particular on-line interactive programmes.

These are new positions within our rapidly expanding Computer department that will shortly install on IBM 4331.

We offer excellent salaries plus the usual benefits associated with a major group including private medical care and relocation expenses where necessary.

For further information applicants, male/female, should apply in writing enclosing details of career to date, or telephone:

George Vale, Personnel Manager
Philip Morris Limited, Great West House
Great West Road, Brentford, Middx.
Tel: 01-898 4181

Philip Morris

(2039)

DERBY CITY COUNCIL SENIOR PROGRAMMER

£11,200-£17,000
(plus pension and other benefits)

ICL 2860 installation.

Substantial COBOL programming experience and a knowledge of the Derby Council's information management system would be advantageous.

Compensation according to qualifications and experience and generous resettlement allowance paid in appropriate cases.

Job details and application form from:

City Treasurer
The Council House, Derby
Telephone 01111, ext. 319

Derby

Derby

Derby

Derby

Derby

Derby

We're Number 1

In Computer Contracts

We're number one in computer contracts because our policy is to match your requirements with those of our clients. We always ensure the two are totally compatible. Whatever your salary level, experience and desired location contact us now for an informal discussion to obtain an objective appraisal of your prospects and earnings potential. Here are just some of our current vacancies.

IBM SYS 34 RPG II IBM APL IBM SPS IBM OS JCL/COBOL IBM DOS COBOL VSAM JCL	ANALYST/PROGRAMMER PROGRAMMER PROGRAMMER PROGRAMMER PROGRAMMERS	SURREY HOLLAND NEW YORK BERKS LONDON
UNIVAC 1100 ASSEM UNIVAC DMS ASSEM	PROGRAMMERS SYSTEMS PROGRAMMER	NEW YORK NEW YORK
HONEYWELL 62 TPS/IPS COBOL HONEYWELL 66 IDS/TDS COBOL	ANALYST/PROGRAMMER ANALYST/PROGRAMMER	BERKS SURREY
TEXAS INSTR COBOL	ANALYST/PROGRAMMER	AMSTERDAM
PDP RSXII FORTRAN	PROGRAMMERS/ANALYSTS	AMSTERDAM
MINI R/T FORTRAN/ASSEM MINI R/T CORAL/ASSEM	PROGRAMMER/ANALYSTS ANALYST/PROGRAMMER	BELGIUM HERTS

01-734 0152 (24 hours)

Knights
No. 1 INTERNATIONAL COMPUTER CONSULTANTS

London
Manchester
Birmingham
France
Holland
U.S.A.

Royalty House,
72, Dean Street,
London, W.1.



Systems Designer

Management Information Systems

Westminster

c. £9,500

Our client is a British Government owned company operating exclusively in the public sector overseas for the supply of defence equipment, technical support and the management of major infrastructural projects.

At present the Company's accounting and management information systems are based on computer bureau facilities accessed by means of on-line terminals. To develop these systems and ensure that the changing demands of a rapidly developing business are met, a new position of Systems Designer has been created.

Reporting directly to the General Manager, Planning and Management Services, the Systems Designer will be responsible for the preparation and implementation of a program for systems development. This will involve designing and specifying new systems, liaison with the bureau, supervision of programming staff in the development of new applications and advising management on the use of these systems.

Successful applicants will have several years analysis experience. A knowledge of either CALL AS, or another terminal-based, on-line information management facility would be advantageous.

AN EXCEPTIONAL BENEFITS PACKAGE includes free BUPA, non-contributory Pension Scheme, Luncheon Vouchers and 5 weeks holiday. For details please telephone Kevin McCourt quoting reference number 3876, or write in strictest confidence.

Lloyd Chapman Associates

123, New Bond Street, London W1Y 0HR 01-408 1670

هذا من اجل

...hance a perpetua-
...the chances of
...the longer and distress
...for reasons which are not
...necessarily a fundamental
...misunderstanding of the or-
...ginal arrangement, but
...more major modifications
...or imperceptible develop-
...ments in the factors in-
...volved which slowly accu-
...mulate (and is significant
...in that such a corruptio-
...n into an irretrieval and
...emotional mess.)

As far as I can see, the
fundamental problem is
that the average citizen has
an absolute trust in the in-
tegrity of human nature
until it is proven otherwise
— usually, many times over.
— let a view the sales con-
tractions with these considera-
tions in mind.

The details of an agree-
ment to supply a service or
product typically consists of
a number of standard fac-
tors, such as volumes,
capacity, size, delivery and

TRADER

Puzzle Answer

EACH Square Triangle
may be "processed" to
give a consecutive-*alpha*
Pythagorean triplet, as
follows:

Solve the two simulta-
neous equations

$$D = B - A - 1$$
$$C = \frac{1}{2}(2A + 1 - B)$$

where the sides of the
triplet are A and (A + 1),
and B is the hypotenuse;
where C is the square root
of the square-triangular
number D and where D is the
total of the 35 square
Triangle when it is set out
in triangular form.

Considering the third
Square Triangle, 1225 as
given, C = 35 and D = 49.
Solving the equations
then produces the triplet

MARTINS

MANAGEMENT, PROJECT LEADERS

SENIOR SYSTEMS ANALYSTS, TECHNICAL SUPPORT ANALYSTS, O&M ANALYSTS. For on-line Database development work. CAO Engineering and Manufacturing Application. Area: Warwickshire. Salaries to £9,500. Ref: SA259.

COMPUTER MANAGER. Small mainframe. At least 5 years' experience on commercial applications using IBM or UNIVAC Assembler or RPG. Area: Stalls. Salary: £NEG. Ref: M89.

PROJECT LEADER AND SYSTEMS ANALYSTS. At least 4 years in D.P. Area: Leicester. Salary: £9,000. Ref: SA224.

ANALYST PROGRAMMERS/PROGRAMMERS

ANALYST PROGRAMMER. At least 3 years' in O.P. using Cobol. Experience with Software Support or Database Design an advantage. Area: Coventry. Salary: to £7,500. Ref: P474.

PROGRAMMER. At least 1 year programming in RPG II or willing to retrain experienced programmer using another language. Area: Leicestershire. Salary: to £6,000. Ref: P504.

SENIOR PROGRAMMER. At least 2 years' using IBM Cobol. Area: Leicester. Salary: to £7,700. Ref: P330.

SENIOR ANALYST PROGRAMMER. At least 3 years in O.P. preferably with IBM Hardware. Language Cobol. Early promotion opportunity to supervisory manager position. Area: Wolverhampton. Salary: to £8,000. Ref: SA264.

ANALYST/PROGRAMMER AND COBOL PROGRAMMER. Required for Groups Computer Centre in West Bromwich. Salaries: to £8,000. Ref: P192.

OPERATIONS SUPPORT PROGRAMMER. At least 18 months' Cobol and Assembler. New Online Database System shortly. Area: Northamptonshire. Salary: to £8,000. Ref: P486.

ANALYST/PROGRAMMERS

SENIOR PROGRAMMER. At least 2 years' Cobol, Honeywell G200 preferred. Area: Near Wolverhampton. Salary: £7,000. Ref: P494.

PROGRAMMER. At least 2 years' RPO II. ICL Hardware. Busy Bureau environment writing Programmes and Packages for clients. Area: Central Birmingham. Salary: c. £7,000. Ref: SA283.

SYSTEMS ANALYSTS, MANAGEMENT

SYSTEMS ANALYST. At least 3 years' Commercial Systems Honeywell installation. Area: Near Wolverhampton. Salary: to £8,000. Ref: SA243.

COMPUTER MANAGER. Several years' experience on Honeywell Mainframe and Mini Computers. Area: Stalls. Salary: £NEG. plus company car. Ref: P484.

SENIOR SYSTEMS ANALYST. At least 5 years' D.P. experience including Project Management level to lead a team of 5 Analysts and Programmers specialising in Sales and Financial systems. Formal Programming background desirable. Honeywell Hardware an advantage. Area: North Stalls. Salary: to £8,500 plus relocation package. Ref: SA277.

ANALYST PROGRAMMERS/PROGRAMMERS ANALYST PRO.

PROGRAMMER. At least 1 year's programming in RPG II or willing to retrain experienced programmer using another language. Area: Leicestershire. Salary: to £6,000. Ref: P504.

SENIOR PROGRAMMER. At least 2 years' using IBM Cobol. Area: Leicester. Salary: to £7,700. Ref: P330.

SENIOR ANALYST PROGRAMMER. At least 3 years in O.P. preferably with IBM Hardware. Language Cobol. Early promotion opportunity to supervisory manager position. Area: Wolverhampton. Salary: to £8,000. Ref: SA264.

ANALYST/PROGRAMMER AND COBOL PROGRAMMER. Required for Groups Computer Centre in West Bromwich. Salaries: to £8,000. Ref: P192.

OPERATIONS SUPPORT PROGRAMMER. At least 18 months' Cobol and Assembler. New Online Database System shortly. Area: Northamptonshire. Salary: to £8,000. Ref: P486.

D.P. OPERATIONS PERSONNEL

OPERATIONS MANAGER. At least 5 years in O.P. using IBM Hardware under OOS/VS CICS. Experience in Software Programming essential. Area: Worcester-shire. Salary: to £10,000. Ref: M71.

OPERATIONS TEAM LEADER AND OPERATORS. At least 2 years' operating ICL 1900 range using George III. Area: Wiltshire. Salaries: to £8,500. Ref: 0223.

SENIOR OPERATOR. At least 3 years' in O.P. Operations using OS/VS, VS1. Area: Wiltshire. Salary: to £7,000. Ref: 0213.

PROJECT LEADERS, SYSTEMS ANALYST

SENIOR SYSTEMS SPECIALIST. At least 3 years' Commercial Systems preferably with IBM CICS HIS experience. Opportunity to work overseas. Area: Nottinghamshire. Salary: According to experience but very competitive. Ref: SA279.

BUSINESS SYSTEMS ANALYST. At least 5 years' in D.P. Good knowledge of O. & M. and O.R. Techniques required including working at Project level. Area: Wiltshire. Salary: to £9,000. Ref: SA204.

O.P. MANAGER for existing ICL Systems to installation. At least 5 years' in O.P. including Management level. Knowledge of Assembler or RPG II essential. Area: Near Wolverhampton. Salary: to £8,500. Ref: M73.

COBOL PROGRAMMER. At least 1 year's Commercial programming experience. Area: Wiltshire. Salary: to £7,000. Ref: P508.

COBOL PROGRAMMER. At least 3 years' Cobol. Preferably ICL. On-Line experience not essential. Area: North Nottinghamshire. Salary: to £8,500.

ANALYST PROGRAMMER. OEC Hardware using RTL2 Process Control Applications preferred. Area: Nottingham. Salary: £Negotiable. Ref: SA278.

DIBOL OR BASIC PROGRAMMER. OEC Hardware. 1 year plus experience. Area: Northamptonshire. Salary: to £7,500. Ref: P505.

SENIOR PROGRAMMER. At least 3 years' ICL Cobol and Plan to overhaul existing systems and implement packages. Area: Redditch. Salary: to £7,000. Ref: P507.

PROGRAMMER ANALYST. At least 12 months' programming in Oecshere or similar language. Area: South Warwickshire. Salary: to £7,000 plus company car. Ref: P4217.

RING**GRAHAM ASTON**

MARTINS COMPUTER SERVICES

1st FLOOR, WESTERN HOUSE

SMALLBROOK QUEENSWAY

BIRMINGHAM B5 4HQ

24-HOUR ANSWERING SERVICE

021-643 2111**IBM OS SENIOR OP/SHIFT LEADER -**or possibly
senior data control or production control**WORK DAYS ONLY**

If you know your IBM OS, JCL, and UTILITIES and have worked with on-line systems especially CICS -

Why not move into a USER SUPPORT role with our client in NORTH KENT and treat yourself to an earnings package in excess of £7,000 in the process?

Your job will be to aid the user department and development staff with the control and operation of a daily real-time on-line system based on CICS and IDMS on an IBM 3031.

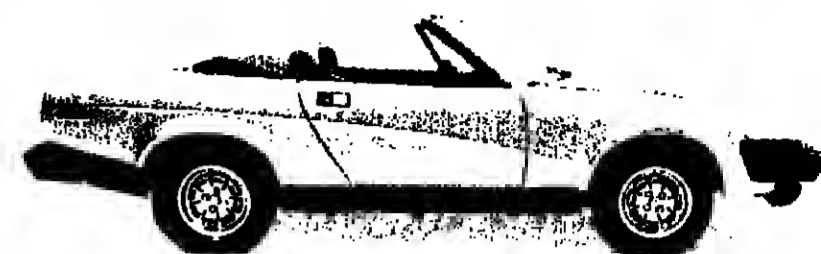
There are excellent benefits including subsidised lunches, bonus, non-contributory pension and a RELOCATION PACKAGE.

Phone now to Derek Pearson quoting 798P.

**ZEUS-HERMES RECRUITMENT**

TELEPHONE: 01 388 5011 (24 HOUR SERVICE) OR WRITE
(NO STAMP REQUIRED) ZEUS-HERMES RECRUITMENT LTD
FREEPOST 20 LONDON W1E 4YZ

(2008)

WANTED PROGRAMMERS WITH PLENTY OF DRIVE

If you are interested in getting into "top gear" join Wadham Stringer (Datawork) Limited, a well-established computer bureau in the motor trade.

We are seeking:

★ ANALYST/PROGRAMMERS

(minimum of 2 years' ICL COBOL experience)

★ OPERATIONS ANALYSTS

(minimum of 2 years' GEORGE II and 2904 TP experience)

SALARY: Up to £7,500

★ The company operates an ICL 2950/10 under DMEII and is currently planning a major development.

★ As a part of the TKM Group with a £1,000 million turnover, considerable opportunities exist for advancement.

★ Attractive staff discount scheme for vehicles, boats, petrol and holidays.

★ The computer centre is located on the South Coast with excellent sport and leisure facilities.

Applications with curriculum vitae to:

A. T. Cook, Computer Projects Manager
Wadham Stringer (Datawork) Limited
Silverstone House, Silverstone Road, Cowplain
Portsmouth PO8 8TD. 07014 65211

(1980)

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611

General Manager - Europe**Computer Graphics**

We have been retained to identify and select a General Manager Europe for the Graphics Division of our client, a multi-million dollar American conglomerate involved in the manufacture and development of sophisticated computer products.

The responsibilities will include the consolidation and further enhancement of their business position in Europe, including the UK. Well established in the domestic market and in Europe it will be the task of the successful applicant to control direct sales in the UK and to develop the dealer network on the continent and to extend this area of operation into Scandinavia.

Shortly to be based in new offices in the West of London, the position carries a remuneration package that will reflect the importance of this position, and candidates will currently be earning in the region of £14K. Also offered are an executive car, PPP, Pension, etc. There will be extensive travel in Europe and approximately 4 trips to the USA a year.

Contact Tony McGrath now on 01-637 9611

Suite 201/6, Albany House, 324 Regent Street, London W1R 5AA. 01-637 9611

MANAGEMENT & EXECUTIVE SELECTION**Race against time**

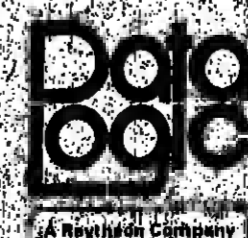
As an experienced systems analyst do you ever feel the computer world around you is moving faster than you are? If so, you're probably working for a single user or manufacturer, out of touch with the developments in the industry as a whole, limited by the systems and equipment you work with, and potentially falling behind the times.

Data Logic's Professional Services Division can help you beat the clock. As one of Britain's leading software houses, we're paid by our clients in commerce and industry, the private and public sector, to provide the most up-to-date thinking on hardware, software, systems and techniques. Every new assignment means looking afresh at what's

available, selecting the best equipment and packages on the market, creating entirely novel configurations and networks.

You'll earn between £8,000-£10,000 depending on your experience plus profit share and travel expenses - you must be prepared to spend much of your time on customer sites, from a Greenford Base.

Either write with full career details, or telephone for further information, to: Barbara Hawkins, Personnel Department, Data Logic Limited, Westway House, 320 Ruslip Road East, Greenford, Middlesex UB6 9BH. Tel: 01-578 9111. Alternatively telephone our 24 hour answering service on 01-235 1535 for an application form.



Where time is on your side